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FORTNIGHTLY

VOLUME 59 APRIL 25, 1957 NUMBER 9

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A more efficient use of railroad and highway transportation facilities is resulting from continued expansion of trailer-on-flatcar operations.

Why Utilities Must Advertise ..... *James M. Stafford, Jr.* 598
Various objectives are accomplished by utility advertising, some of which are quite necessary and important from the standpoint of good operations.

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Have You Investigated

THE MODERN B&W

42 B&W Type EL Pulverizers serve six B&W Open-Pass Boilers in Clifty Creek Plant of Ohio Valley Electric Corporation.

DIRECT-FIRING SYSTEM?

A Compact, Space-Saving Package of Efficient Grinding Power

More power and capacity in a compact arrangement . . . long-range dependability . . . reduced operating cost — these are the measurable results of continuous, intensive development of the modern B&W Pulverizer. It has established an outstanding production and efficiency record in thousands of commercial installations. Here are some reasons why:

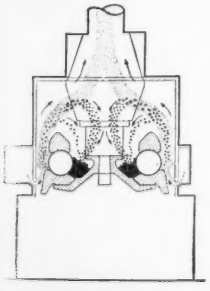
Continuous High Fineness Over Entire Service Life: Efficient combustion requires high fineness at all times. The high circulating load of the B&W Pulverizer permits efficient and dependable classification of product, so that only material of proper fineness leaves the unit. In addition, its slow-speed, spring-loaded ball bearing grinding elements maintain proper grinding contact throughout their service life.

Handles Wide Variety of Low Grade and Wet Coal: Regardless of the coal's grade or whether it's dry or soaking wet, the B&W Pulverizer's unique and exclusive recirculation of fuel through heated air assures efficient grinding . . . eliminates shutdown, capacity loss, or special attention from operators.

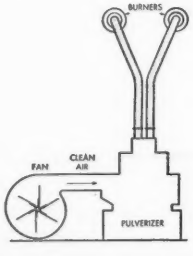
Simplicity of Arrangement and Reduced Maintenance: Accessibility for all normal maintenance makes it simple, quick, safe and low-cost. Adjustments are eas made while the unit is in operation. Using only cle primary air supplied under pressure, fan maintenan is substantially reduced and fuel piping is greatly si plified. Also, with the pulverizer acting as its own d tributor, no special distributing devices are neede Grinding elements are of special alloy material. Th last two years or more on eastern coals and at least year on midwestern coals.

Adaptable to All Types of Automatic Controls: Because it features "one point contact with the boiler operation of the B&W Pulverizer is simple. The boiler automatic combustion control is connected to the pu verizer at only one point—the damper in the primar air duct. The pulverizer's own control system regulat all other functions, such as maintenance of proper fue air ratio and operating temperature.

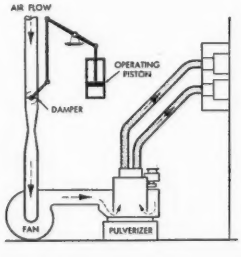
SEND FOR DATA. For full information about the B&W Type EL Pulverizer and Pulverized-Fuel Firing Systems, write: The Babcock & Wilcox Company, Dept. PUF-1A, 161 E. 42nd Street, New York 17, N. Y.



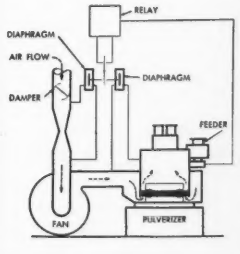
COAL RECIRCULATION — this means high fineness, aids drying.



PRESSURE SYSTEM — this eliminates fan wear, simplifies piping.



AIR CONTROL—this means one, simple control contact point.



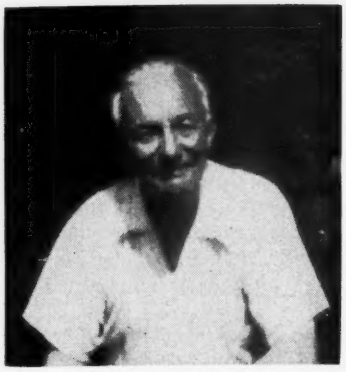
MILL LEVEL CONTROL — this automatically adjusts fuel-feed.

BABCOCK & WILCOX

BOILER DIVISION

Pages with the Editors

THE leading article in this issue comes from an author whose product often appears in this magazine and is invariably well received. In fact, we occasionally get inquiries about JAMES H. COLLINS because we usually forego any personality reference to him in these pages due to frequency of his contributions. Recently, however, MR. COLLINS became our neighbor, so to speak, moving from the glamorous atmosphere of Hollywood, California, to a setting at least equally spectacular these days, in its own way—Washington, D. C.

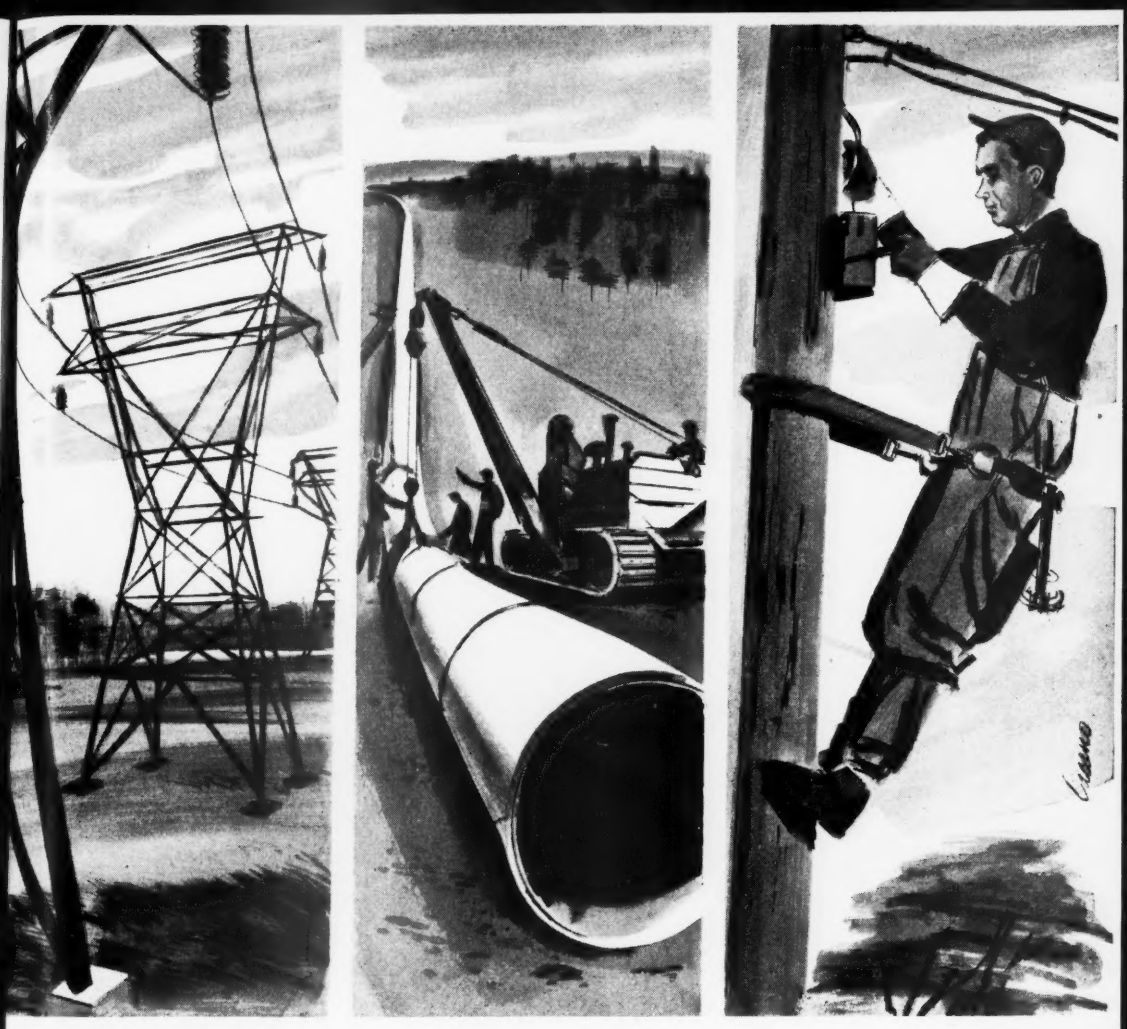


JAMES H. COLLINS

HE has been writing articles about business in a popular and entertaining style for nearly six decades. Born in Detroit in 1873, MR. COLLINS became a regular contributor to the old *Saturday Evening Post* around the turn of the century and was so engaged for twenty years. During World War I he gained experience about government methods as a volunteer under Herbert Hoover's Food Administration and the old George Creel committee on public information, which graduated so many other fine writers. For a brief time he became a salaried employee of Uncle Sam, serving with the now defunct Emergency Fleet Corporation of the old U. S. Shipping Board, then headed by the late Edward N. Hurley. MR. COLLINS moved to Los Angeles in 1927, and served many years as editor of *Southern California Business,* monthly magazine of the Los Angeles chamber of commerce. Since then he has been a free lancer. During his very early years, MR. COLLINS had a number of experiences. But one of the most colorful—when he can be prevailed upon to talk about it—was serving as an advance agent for the old Barnum & Bailey circus during the Gay Nineties. We welcome MR. COLLINS back East as our good neighbor and hope he will continue to turn out for us from time to time, more of his excellent contributions about the human side of business operations.

JOHN T. COLLIER

THE first article in this issue is written in the spirit of describing human nature as it reacts to a real problem of telephone and electric utility operations. It seems to take a hurricane or something like that to create an audience for public education on the relative merits and economy of overhead lines compared with underground utility line construction. Both the electric utilities and the telephone utilities have had to weather considerable criticism for not burying lines. This is especially true where the "big blow" knocks down and out of service a considerable amount of customer lines. By way of contrast, it is noteworthy that as long as service is uninterrupted, the customer, public, and the



THE IRVING TRUST COMPANY SERVES VITAL INDUSTRY

service lines into the future...

Vast growth of the Utility Industry has had its share of financial complexities. However, close to the pulse of the financial world and to the Industry itself, our specialists continue to reach ahead with new and sound approaches.

Whether an undertaking of capital planning, financing, or cultivation of the financial community—our Analytical Studies, Seminars and Round Tables may prove valuable aids to your company's future.

For more information, call Public Utilities Department at DIgby 4-3500 or write us at One Wall Street.

IRVING TRUST COMPANY

One Wall Street, New York 15, N.Y.

Capital Funds over $125,000,000 *Total Assets over $1,500,000,000*

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Public Utilities Department—JOHN F. CHILDS, *Vice President in Charge*

MEMBER FEDERAL DEPOSIT INSURANCE CORPORATION

press are not much interested in two facts of life important to both telephone and electric utility companies. These are overhead systems and city trees.

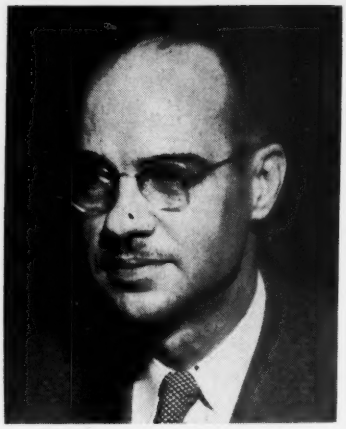
* * * *

A MORE efficient use of railroad and highway transportation facilities is resulting from continued expansion of trailer-on-flatcar operations, commonly called "piggyback." Offering better service for shippers and added revenues for the railroads, piggyback could have far-reaching effects on rates, costs, and our whole system of distribution. In his article beginning on page 588, JOHN T. COLLIER, a student of transportation problems for many years, tells of the shift of railroads to "piggyback" operations.

MR. COLLIER is a native of Memphis, Tennessee, where he was born in 1910, and a student of transportation economics and journalism who has written many articles on industrial transportation problems. He attended the University of Illinois and graduated from American University (BS). He served in the public relations department of the Insull organization in Chicago, specializing in transportation properties. During World War II he commanded cavalry and armored units for the Army and after some post-war service as a public relations adviser for electric manufacturers in the Middle West, he became in 1950 a public information staff officer of the U. S. Public Health Service in Washington, D. C.

* * * *

WHY should a public utility company advertise? Both utility and regulatory people have heard that question asked time and again. It seems to be based on the assumption that such advertising is unnecessary because a utility company has a service area monopoly. But the question cannot be answered so simply. In his article beginning on page 598, JAMES M. STAFFORD, JR., director of the advertising and publicity department of the Kansas City Power & Light Company, Kansas City, Missouri, explains the various objectives accomplished by a utility advertising. MR. STAFFORD has a substantial background on utility advertising,



JAMES M. STAFFORD, JR.

in view of his twenty-one years' service with the staff of the Georgia Power Company. He is a graduate of Oglethorpe University (AB, '23) and Harvard School of Business Administration (MBA, '25).

IN connection with his article on utility advertising publicity and public relations angles, MR. STAFFORD wishes to acknowledge valuable assistance from the following utility officials: Robert H. Bridges, director, advertising and public relations, Cleveland Electric Illuminating Company; Herbert H. Briggs, Jr., manager, advertising and publicity, Duquesne Light Company; Richard D. Furber, director, public information and advertising department, Northern States Power Company; Ray Martin, director of advertising, Consolidated Edison Company; Malcolm B. McDonald, secretary and director of advertising and publicity, Florida Power & Light Company; A. James McCollum, manager, advertising and publicity department, Pacific Gas and Electric Company; Paul L. Penfield, director of advertising, the Detroit Edison Company; E. N. Pope, director of advertising, Carolina Power & Light Company; Randolph K. Wheat, assistant vice president, The Chesapeake and Potomac Telephone Company.

THE next number of this magazine will be out May 9th.

The Editors

This machinist is "miking" a disc for one of the largest butterfly valves ever built — 192" diameter. Newport News built 3 such valves, each weighing 446,000 lbs., for the Ross Power Plant, Skagit Project, Department of Light, City of Seattle, Washington. Designed for a water flow of 3,620 cu. ft. per sec., and a hydrostatic pressure of 290 psi., these valves were shop tested by Newport News at 450 psi. They are hydraulically operated with oil at 1,500 psi. pressure.

Birth of a **200-ton** Butterfly

This disc for a 16-foot butterfly valve reflects two basic advantages of Newport News fabrication...

First, it exemplifies the *careful attention* Newport News craftsmen give to every detail. And secondly, it attests to the *quality* with which Newport News produces in massive equipment for public utilities and allied industries... due to Newport News' high integration of skill and production facilities.

Additional advantages accrue to customers from extensive work conducted in Newport News' testing laboratories on problems related to water power equipment.

Avail yourself of the engineering talent, along with the specialized production techniques and the skill of Newport News craftsmen operating vast steel fabricating shops, five huge machine shops, drop forging and die facilities along with acres of brass, iron and steel foundries.

Let us bid on equipment for your present or future projects. If you are not familiar with the way Newport News can help you, write for our illustrated booklet entitled "Water Power Equipment" ...it's yours for the asking.

NEWPORT NEWS

Shipbuilding and Dry Dock Company
Newport News, Virginia

Coming IN THE NEXT ISSUE

(May 9, 1957, issue)

★

OUR DEFECTIVE FEDERAL PROJECT POWER MARKETING LAW. PART I.

In the Flood Control Act of 1944, Congress made the Secretary of Interior the marketing agency for all power developed at federal multipurpose projects under the act. Pursuant to this the government signed a 30-year contract in 1952 to furnish power to Reynolds Metals Company in combination with Arkansas Power & Light Company. Now it appears the government is losing out of pocket nearly $2 million a year and it wants the contract annulled. What can and should be done about this unworkable provision of law in fairness to all parties? This first of a 2-part series by Robb M. Winsborough, vice president, Middle West Service Company, discusses this case, and the second part will discuss the need for remedial legislation.

UTILITY COMMON STOCK FINANCING

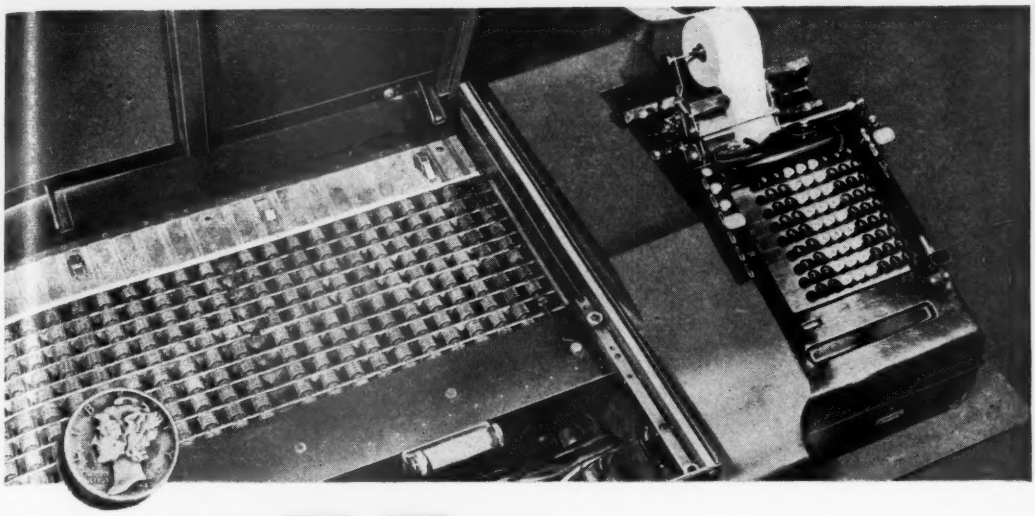
Should utilities offer new issues of common stock through the medium of stock rights? Frederick W. Page, vice president of Tri-Continental Corporation, one of the large diversified, closed-end investment companies, suggests in his forthcoming feature article that this method should be avoided since rights tend to dilute per share earnings. Reasons for his views are set forth in detail, as are the several factors which he believes can accomplish a steady upward trend in per share earnings. This is a point of view which may not be shared by a good many utility companies which have found it to their advantage to use rights in the distribution of new security offerings. However, Mr. Page's well-considered discussion is presented on its own merits.

SAMPLING METER-TESTING TECHNIQUES

Substantial savings in utility operating costs are expected by the Virginia Electric & Power Company from an improved approach to meter testing through the application of modern sampling methods.The procedure provides a means of selecting for test those meters which may require calibration and reduces the unproductive and time-consuming operation of testing meters which are within the limits of allowable accuracy. W. Capers Harrison, system meter supervisor of the company, explains how this interesting and valuable innovation of meter procedure has been developed and why it has gained the favorable attention of regulatory authorities.

★

Also . . . ***Special financial news, digests, and interpretations of court and commission decisions, general news happenings, reviews, Washington gossip, and other features of interest to public utility regulators, companies, executives, financial experts, employees, investors, and others.***



Money maker for the company and you-

Just as sure as if it coined actual cash the work done by our "Bill Frequency Analyzer" * will swell your company coffers!

The work it does produces rate analyses faster and more accurately than *any* other method – a sure protector of profitable rate revenue when done on a monthly basis – a real boon when rates are reviewed.

Complete *monthly* analyses by the "One Step" method give you an always true picture of your rate revenues, never a distortion such as occurs when a few months 'sampling' is used as a check. This is of paramount importance when submitting figures to Rate Commissions, and when the figures are compiled by R & S they really rate in rate cases.

R & S specializes in serving utility companies all over the country – we know your problems, know how to interpret your requirements and give you any break-down in report form you may require . . . minimums, demand rates, and so on.

We can conclusively prove to you that our "One Step" method of rate analysis will *make money for the company and you* – all we need is a sample of your billing sheet, a copy of rate schedules and an estimate of the number of customers billed at each rate, and your frequency table requirements. From these we can give you an estimate of costs and a time table for production – both will be eye-openers! Write Dept. P today.

RECORDING & STATISTICAL CORPORATION

"Your key to better figures since 1911"

100 SIXTH AVENUE • NEW YORK 13, N. Y.

* exclusive with R & S – the oldest and largest punched card service bureau in the United States, offering every ity for swift, accurate data processing – continuing or peak-load.

Remarkable Remarks

"There never was in the world two opinions alike."
—MONTAIGNE

BEN MOREELL
Chairman of the board, Jones & Laughlin Steel Corporation.

"The great deficiency of the [federal] navigation program is that it provides a service for a relatively few carriers, in competition with tax-paying transportation enterprise, without any contribution by the direct beneficiaries and without any charge for the use of the facilities."

EDITORIAL STATEMENT
The Wall Street Journal.

"Of course the whole idea that some few people some place control the price of money is one of the most blatant pieces of demagoguery that has been invented. . . . Interest rates go up because the demand for money goes up. Higher interest rates are merely the higher prices paid to savers. The savings bank depositor gets a better reward for saving. So does the holder of a life insurance policy. So does anyone else who has saved money and has it to lend. The 'greedy few' are really quite a multitude."

LEE A. DUBRIDGE
President, California Institute of Technology.

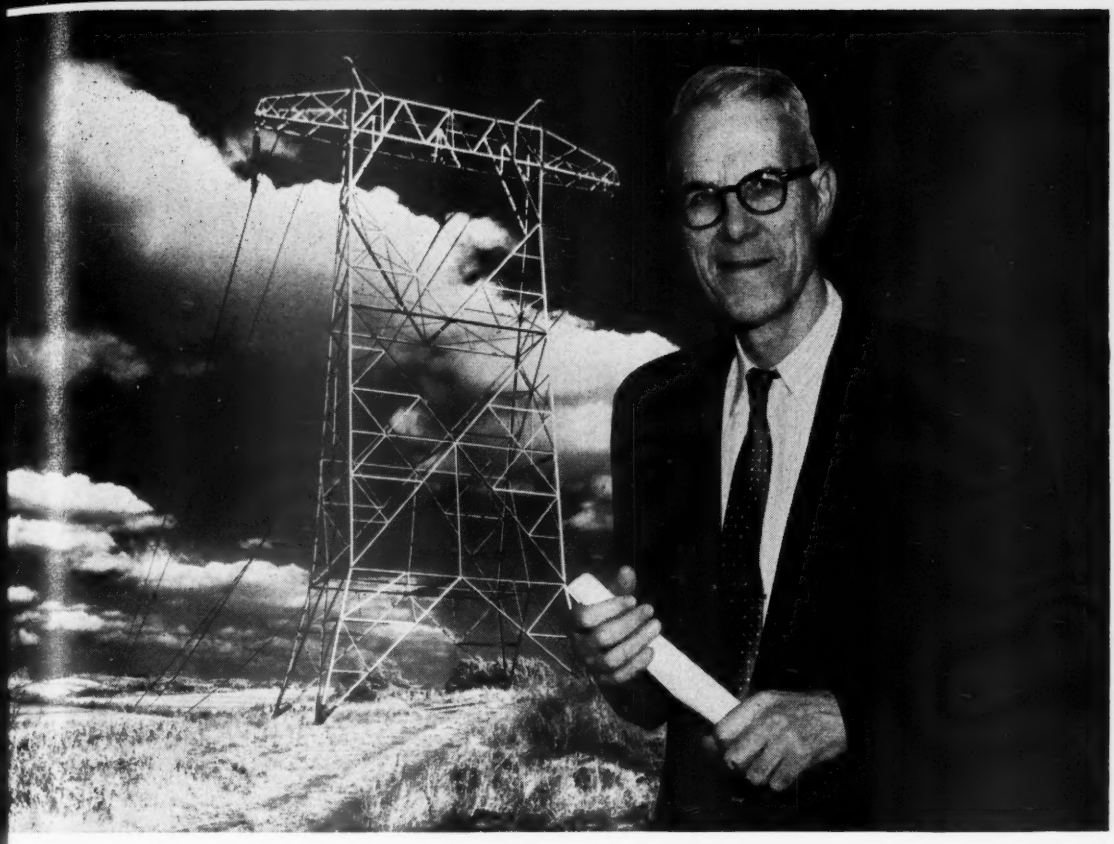
"(Because schools have failed to teach [science and mathematics] either widely or well) we face a new type of illiteracy today in which citizens are unable to read and understand the things about which they must make decisions, all the way from spending billions on nuclear energy . . . to what to do about smog . . . Mathematics and science are great intellectual adventures that have enlarged and broadened man's intellectual horizons, freed the human spirit from ignorance and fear, and elevated him above a primitive existence."

HENRY H. HEIMANN
Executive vice president, National Association of Credit Men.

"It is a fact that if industry tomorrow were allowed to double the existing depreciation allowance it still would be wholly inadequate. With the tax load so heavy and depreciation allowance so low little wonder that managements of plants and industries are hard-pressed to know how they can manage to keep their plants modern and efficient. Where, they inquire, is the money to come from. How can they plan for 'keeping abreast of the modern needs' without incurrence of a top-heavy debt structure or dilution of their stockholders' equity through the flotation of additional shares."

Excerpt from the Economist (June 7, 1856).

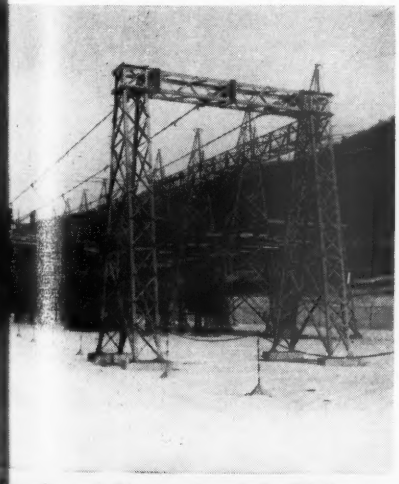
"The principle on which legislation must proceed to lessen poverty is, as we now know from much experience, to remove restraints and restrictions, to permit the field of enterprise to become common and uninclosed as Nature made it, to leave the development of all the diverse faculties and powers of individuals perfectly free, assured that they are no more made in vain than the many flowers of the field. Their full development is necessary for the well-being and harmony of the whole, and the legislation which proposes to lessen poverty and its multiplied evils by any kind of restrictions is an error."



w the Bell System serves the power industry

eliability and economy influenced our choice f Bell System private line communications"

—E. W. Middleton, superintendent of system operation, Pennsylvania Power & Light Co.



coming switching station of the PP&L, one y which are now remotely controlled through stem private line channels.

"Within the last five years, we've replaced many of our privately owned facilities with Bell System communications," says E. W. Middleton, PP&L system operations superintendent. "I can report now that these new communications are more reliable, economical and have greater capabilities."

Bell System channels for metering give PP&L's Hazleton dispatchers a continuous reading on generation and load throughout the company's 10,000-square-mile area. Channels for remote control provide centralized operation of many substations. And a private line telephone network connects Hazleton with control centers in seven service areas.

• • •

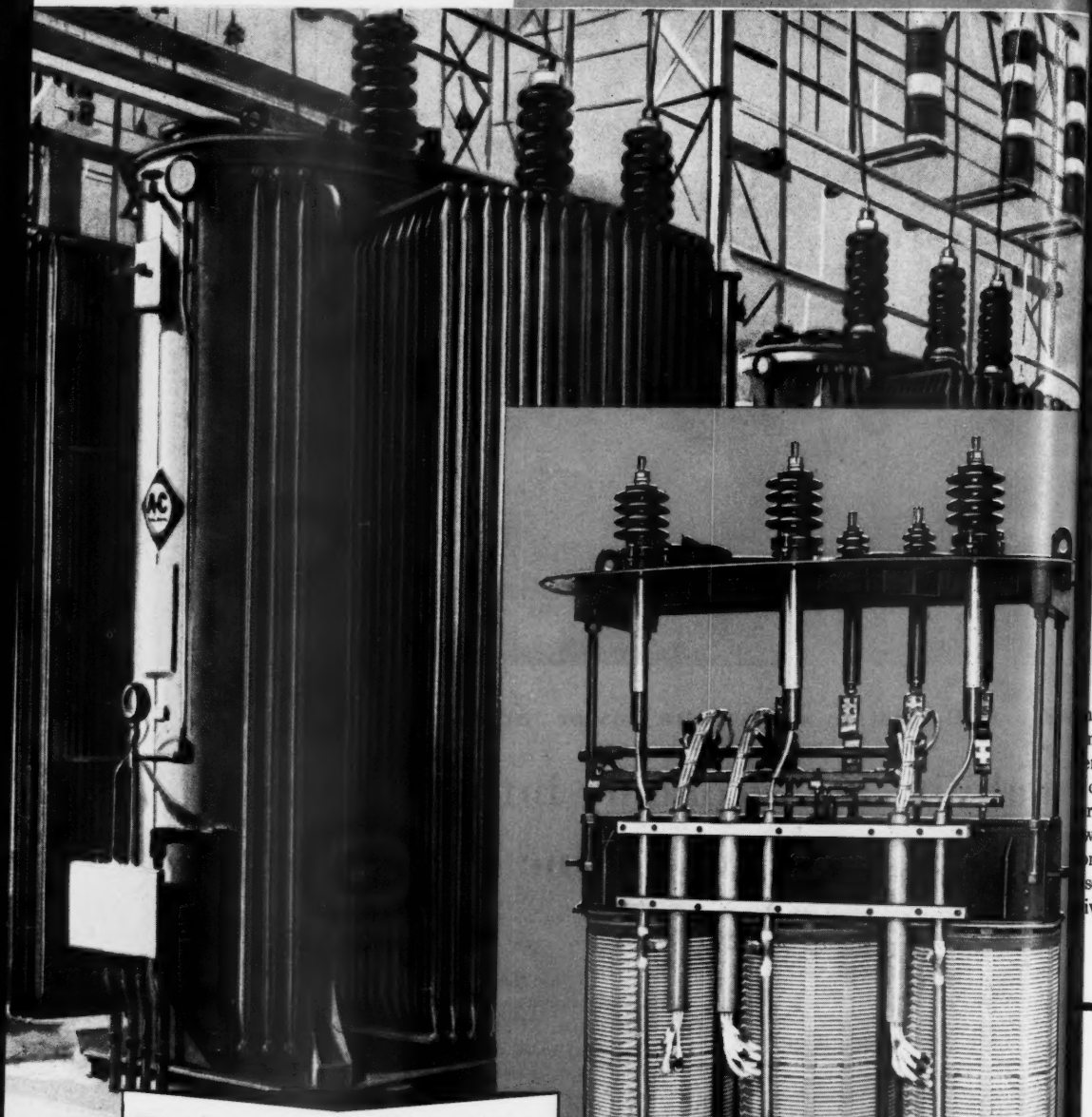
Perhaps your own communications deserve a fresh look. Why not call your Bell Telephone Company business office? A representative will be glad to study your needs.

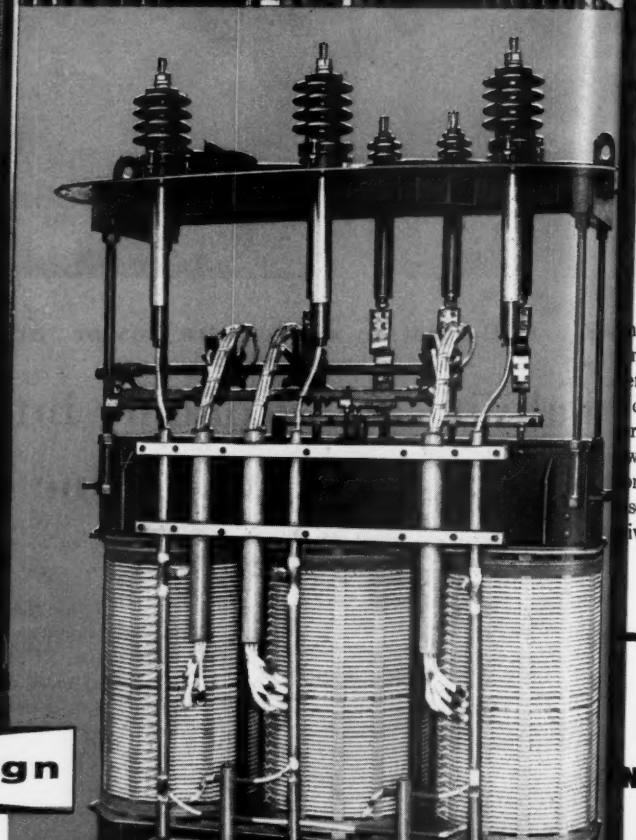
BELL TELEPHONE SYSTEM

PRIVATE LINE TELEPHONE • PRIVATE LINE TELETYPEWRITER CHANNELS FOR: DATA TRANSMISSION • REMOTE METERING AND CONTROL • TELEPHOTOGRAPH • CLOSED CIRCUIT TV

ALLIS-CHALMERS
POWER TRANSFORMERS

Engineered





Balanced Design

...means MORE for your Transformer Dollar

With electrical equipment replacement costs increasing, it's more important than ever to insist upon maximum transformer value. In Balanced Design, features such as corona-free insulation, low gradients, and uniform cooling complement each other to provide outstanding dependability and long transformer life. Get all the facts. Call your nearby Allis-Chalmers office or write Allis-Chalmers, Power Equipment Division, Milwaukee 1, Wis.

ALLIS

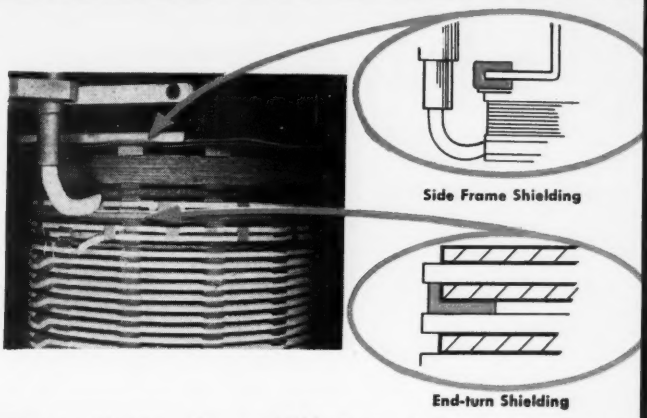
o stay young

Here's Why

1

Corona-Free Design
gives insulation long life

eping paralysis caused by corona can't take life of this transformer. Advanced insula- practices, dimensional properties, proper dination between solid and liquid insula- materials prevent concentration of dielec- fields and keep corona from forming.

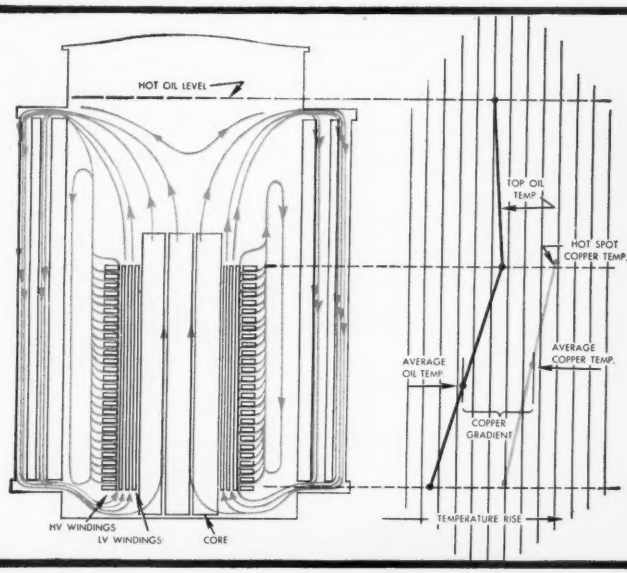


Shown are just two of many shielded areas that protect windings from the overstresses of lightning and switching surges.

2

Low Gradients
thorough cooling lengthens service

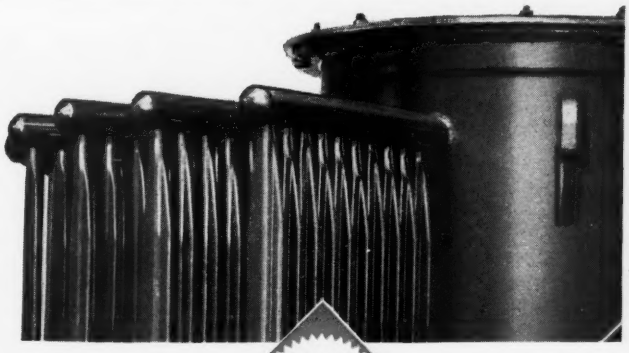
perature gradients are lower—hot spots minimized in Allis-Chalmers transformers. embly is built for rapid cooling. Coils per- cooling oil to flow through and around all rs. Special core spacers on larger units w oil to flow through core structure. Insu- n coordination and uniform cooling in- se insulation life and multiply the value ived for each transformer dollar spent.



3

New Radiator Design
cuts maintenance

er parts—simplified shape facilitates in- tion . . . there are no nooks and corners re dirt and corrosion get in their destruc- licks. Painting costs are reduced. More orm cooling (with less floor space require- ts) extends transformer life.



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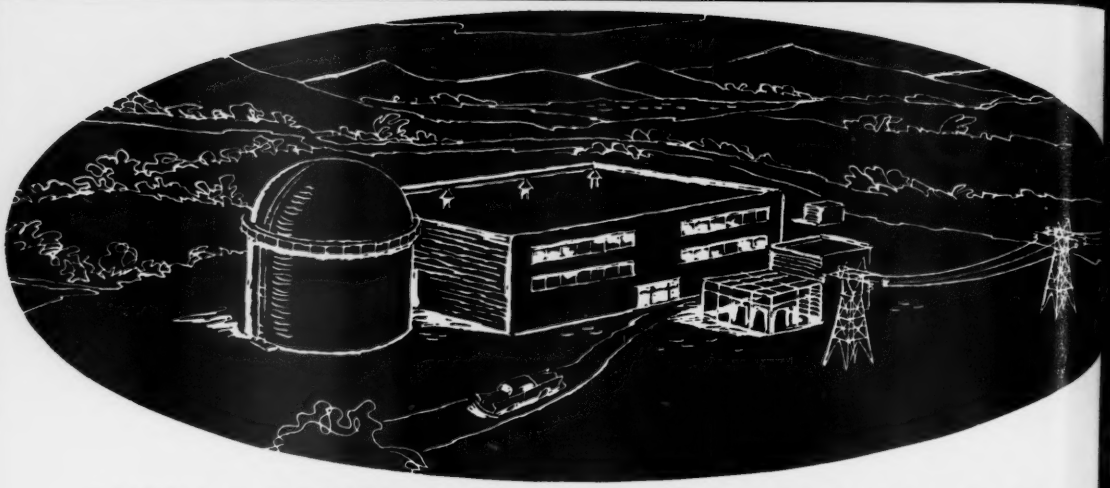

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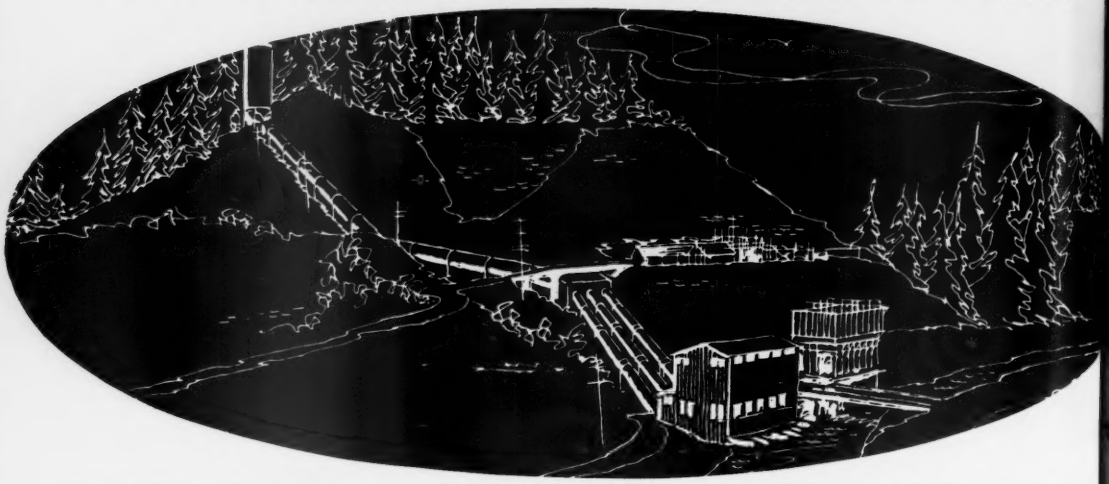

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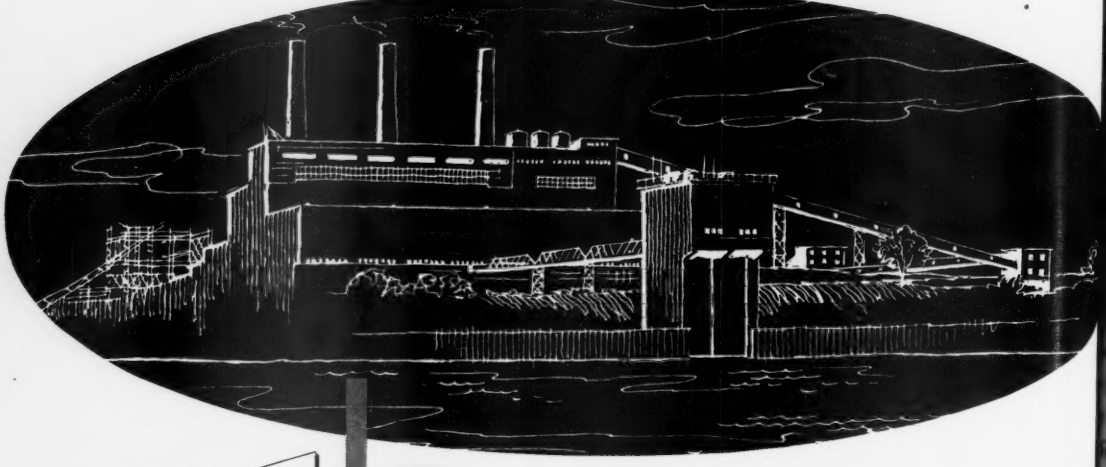

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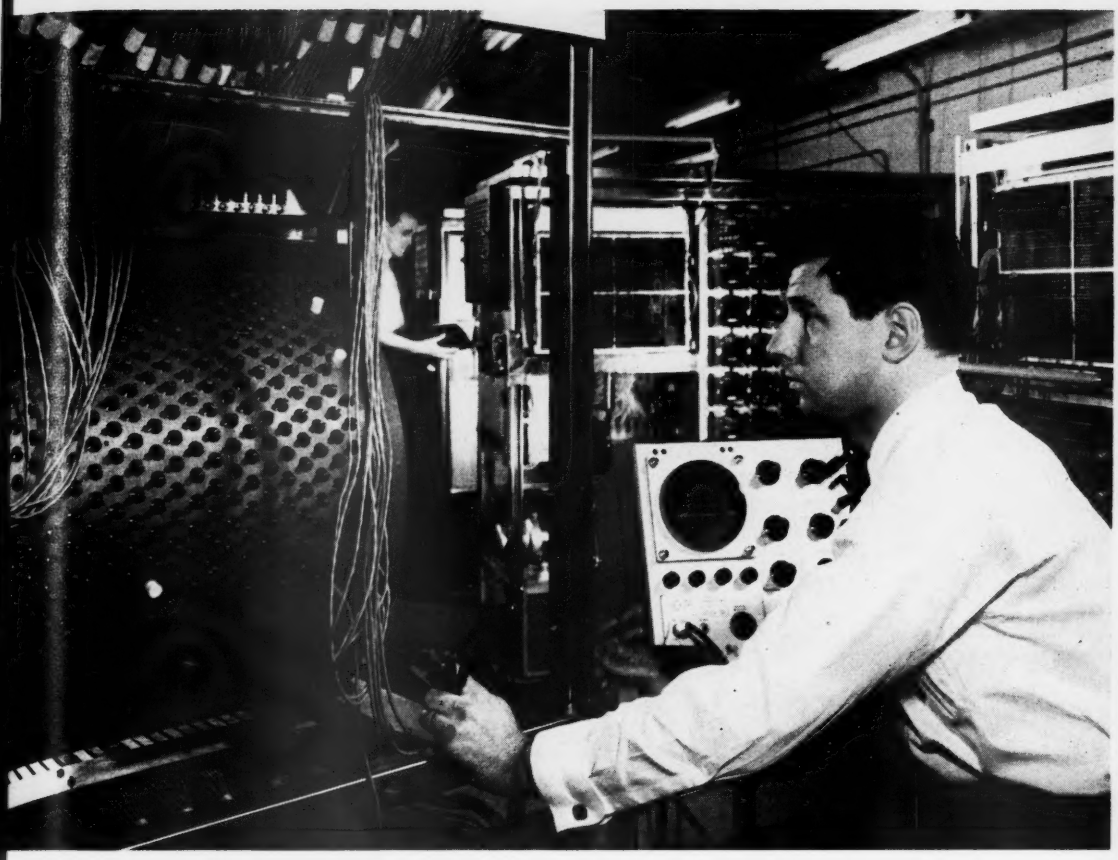

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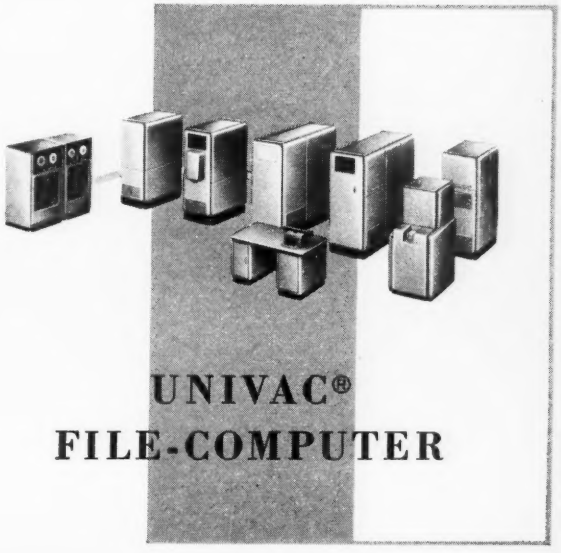

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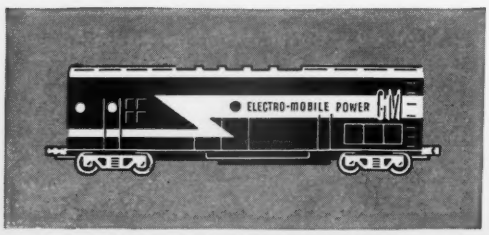
The savings from Electro-Mobile Power are many. Rebuilding or maintenance work of any duration can be handled during regular working hours. Work goes faster, in greater safety, and most important—customer relations and income are maintained during the temporary outage.

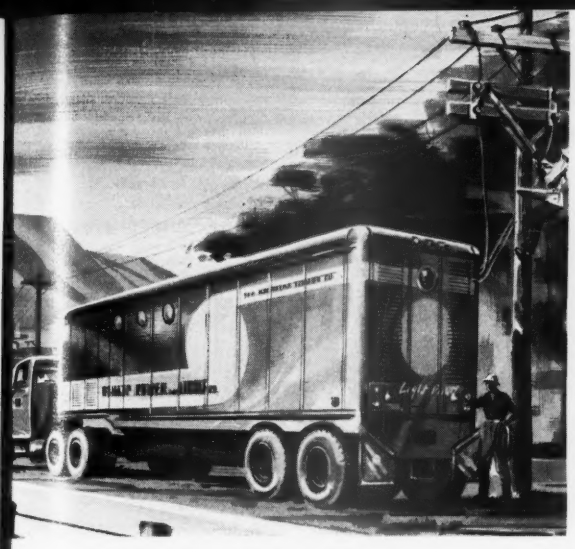
A planned outage is no outage with Electro-Mobile Power. Its many advantages are helping to reduce costs and improve service for many utilities. It can do the same for your system. Your Electro-Motive representative will be glad to show you how.

Here's how one Midwestern utility company uses its Electro-Mobile trailer . . .

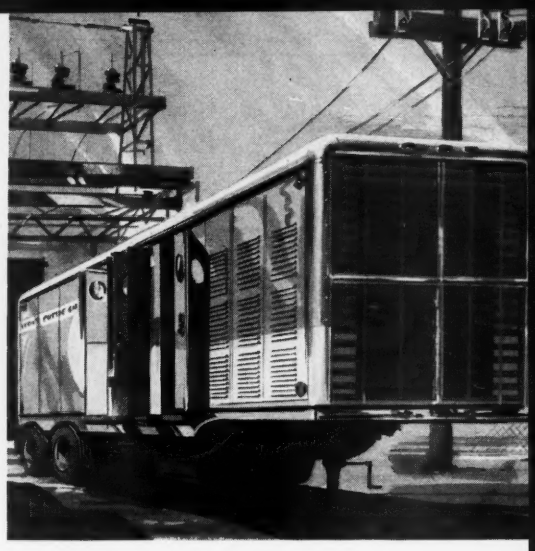
In a span of twelve months, this utility used its Electro-Mobile trailer on fifteen different jobs. Shown here are some examples of the work completed and in progress with this unit. During the year the mobile trailer was operated over 340 hours. On one job alone, it was used 145 hours, delivering 58,500 KWH.



Rail Car—develops 1,000 kw. For use on rail sidings or placed on piers for semi-permanent installation.



Relocating 12,400-volt line for new highway.
Hours used: 68 ¼ KWH generated: 22,700



Installation of new transformer for substation.
Hours used: 3 ½ KWH generated: 1,100

Feeding 12,400-volt sub-transmission line while stringing new conductors on transmission line.
Hours used: 145 KWH generated: 58,500

Handling daily peaks while existing transmission line and substation are being rebuilt.
Houts used: daily average 4

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APRIL-MAY

Thursday—25 *Indiana Gas Association begins annual meeting, French Lick, Ind.*	**Friday—26** *American Power Dispatchers Association, Inc., begins national spring meeting, Los Angeles, Cal.*	**Saturday—27** *American Water Works Association, California Section, begins annual meeting, Santa Monica, Cal.*	**Sunday—28** *Edison Electric Institute, Purchasing and Store Executive Committee, begins meeting, Pittsburgh, Pa.*
Monday—29 *Southern Gas Association begins annual convention, New Orleans, La.*	**Tuesday—30** *Edison Electric Institute, Insurance Committee, ends 2-day meeting, Williamsburg, Va.*	**MAY** **Wednesday—1** *Electronic Components Symposium begins, Chicago, Ill.*	**Thursday—2** *American Water Works Association, Pacific Northwest Section, begins annual meeting, Tacoma, Wash.*
Friday—3 *Pacific Coast Gas Association ends 2-day distribution conference, Palm Springs, Cal.*	**Saturday—4** *Liquefied Petroleum Gas Association will hold annual meeting, Chicago, Ill. May 12-15.* ***Advance notice.***	**Sunday—5** *Air Conditioning and Refrigeration Institute begins annual meeting, Hot Springs, Va.*	**Monday—6** *National Restaurant Association begins convention and exposition, Chicago, Ill.*
Tuesday—7 *American Gas Association begins research and utilization conference, Cleveland, Ohio.*	**Wednesday—8** *Public Utilities Advertising Association begins annual convention, Cleveland, Ohio.*	**Thursday—9** *American Ceramic Society ends 5-day annual meeting, Dallas, Tex.*	**Friday—10** *Wisconsin State Telephone Association will hold annual convention, Madison, Wis. May 15, 16.* ***Advance notice.***

Courtesy, Tennessee Gas Transmission Company

Pipeline in Transit

Public Utilities
FORTNIGHTLY

VOL. 59, NO. 9 APRIL 25, 1957

Comes a Big Wind and People Will Listen

As long as service is uninterrupted, customers, public, and press are not much interested in two facts of life important to power and phone companies—overhead systems and city trees. A hurricane arouses interest, and creates an audience for popular education.

BY JAMES H. COLLINS*

IT's an ill wind that blows nobody good is especially true of a West Indian hurricane in our eastern states, uprooting trees, breaking down power and phone wires, and causing widespread outages and public inconvenience. Then, aroused public opinion wants to know why this thing happened, why utility engineers did not prevent it happening, and what they are doing to make sure it will never happen again. There are strong leanings toward new laws prohibiting such interference with the comfortable course of daily life.

Recent hurricanes have shown utility people that big winds and other outage causes bring an opportunity for public education on two matters:

First, why so many wires are overhead, instead of underground.

* Professional writer, resident in Washington, D. C. For additional personal note, see "Pages with the Editors."

Second, why utility companies trim trees, and why they should be supported in doing it, by public understanding.

It is really a tribute to the dependability of utility services when a "Hurricane Hazel" devastates the city of Washington, and its environs, as happened in 1954. Many of the customers of Potomac Electric Power had never experienced an outage, and now discovered that they were relying on electricity for so many new purposes, and constantly adding new appliances, that a new appreciation was created. They turned their attention to preventive measures, and found a simple solution, in this reasoning:

> Outages were reported as being caused by wires blowing down.
>
> Why were the wires overhead, anyway?
>
> Why haven't the engineers put them underground?
>
> Just put them all underground—there's your trouble!

CLOSELY reasoned logic from insufficient premises, such as the public uses in deciding many complicated problems. That utility engineers had ever thought about burying the wires, or taken preventive steps against service interruptions, is not realized. Given an opportunity to vote on it, there would be an overwhelming majority for burying the wires.

But the public is also ready to consider some engineering facts that in themselves are convincing.

First, if all wires are to be put underground, how much will it cost, and who is to pay for it, including direct costs to utility customers?

For the information of its own customers, Potomac Electric Power compiled data covering this aspect, and the general engineering, financial, rate, and other facts, for customer relations.

At that time the company had 8,349 circuit miles of overhead distribution, $36 million investment, and 3,393 miles underground, $69.3 million investment. It had 53 miles of overhead transmission, 89 miles underground.

Taking current costs, complete burial of all overhead plant would require nearly four times the investment, $387 million of new money to be found, compared with the existing $106 million.

What would such capitalization do to rates? The public is well aware that utility rates are based on investment, and since the war, with inflation, knows that higher rates inevitably follow increased costs. That would mean rates three or four times higher; a $15 to $20 monthly bill instead of an average $5 for a family.

WITH the postwar trek to the suburbs, thousands of moderate-cost houses have been built around Washington, purchased by young people, many newly-weds coming out of military service, establishing homes, having children, living on a pretty tight schedule of instalment payments. Hearing that underground wires will bring such an increase in the family budget, the customers are ready to listen to engineering facts.

Rates are an indirect increase. Underground construction would bring direct costs to the customer, in new underground connections. Potomac Electric allows 20 feet of trenching and conduit free, but most customers served by overhead plant outside the cities would need more footage. Such costs were estimated at from $60 to $285 for trenching and conduit,

plus $35 to $250 in electrical work inside the house, to meet local code requirements.

Underground lines cost more than overhead for various reasons, easily understood. Underground cable is expensive, must be more carefully insulated and protected against moisture, soil acids, and bacteria. Trenching, ducts, and manholes are also more expensive; labor and maintenance cost more. Damage to an overhead line can usually be seen and repaired without interruption of service, where underground damage is not always easily detected and may involve excavation, pulling of cable, and putting in new sections, taking much longer.

THE widely prevalent idea that underground systems would be free from interruptions is also dispelled by presenting facts.

Overhead systems are engineered to withstand heavy winds, and in sleet regions to hold up under heavy loads of ice. But they cannot withstand heavy tree limbs falling on lines, much less uprooted trees that are blown over, roots and all. Underground plant is also subject to hazards such as floods, inadequate drainage of highways and farm lands, and by damage through excavations for road building, utility construction, or repairs.

Finally, there is the time element. In Potomac Electric's estimates it was figured that if sufficient capital were available by a sort of "Presto, change!" along with the necessary equipment and labor, on the basis of $20 million a year, with the job to be carried out along with regular service and company growth, it would take thirty or forty years.

THESE figures harmonize with data from other parts of the U. S., especially New England, where sleet is a hazard, and where in three years up to 1953 there were three hurricanes, two floods, and a tornado, causing outages up to three days. Popular reaction was violent. Several bills were introduced in the Massachusetts legislature requiring all electrical systems to be put underground. A joint commission from the senate and house was appointed to ascertain the costs of underground construction, and this commission worked with the state department of public utilities, obtaining information from utility companies. The findings were effective in quieting public clamor, and no action was taken on the compulsory laws that had been introduced.

At that time the electrical subsidiaries of the New England Electric System in Massachusetts had a total investment of more than $55 million in transmission and distributing plant. Less than 10 per cent was underground. Placing all underground would require an additional investment of more than $1 billion, or about 25 times the existing investment. Rates

¶ "RECENT *hurricanes have shown utility people that big winds and other outage causes bring an opportunity for public education on two matters: First, why so many wires are overhead, instead of underground. Second, why utility companies trim trees, and why they should be supported in doing it, by public understanding.*"

would have to be raised 3½ times to earn charges on such capital, increasing the average monthly household bill of $5.25 to about $18. On a basis of $180 for average underground house connections, nearly $100 million would be spent by 531,600 customers.

This report added that neither an underground nor an overhead system is free from interruptions, either in disasters or normal service. An overhead system is subject to damage from traffic accidents, falling limbs, uprooted trees, and sleet. These damages are easily located and repaired. But underground systems are subject to failure through weak spots in ducts, electrolysis, street work, and traffic accidents. These take more time to locate and repair, and outages can be lengthy.

ANOTHER official report was made by the Connecticut Public Utilities Commission in 1953, following one of the worst ice and sleet storms ever experienced in that state. All electric and phone companies suffered such damage from trees that there was a popular demand for putting wires underground. It was argued that underground wires would be free from such hazards as ice, wind, lightning, and traffic accidents, and that beauty would be added to the landscape by the elimination of poles, towers, wires, and guys.

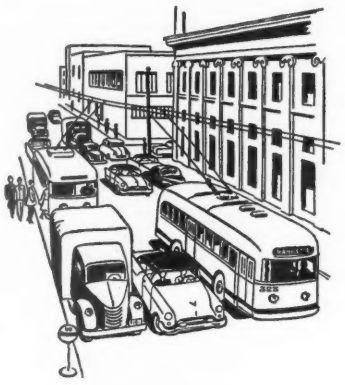
Here, too, the same basic facts were reported. Connecticut's four largest electric companies had 11,000 miles of overhead lines, investment $37 million, and 260 miles underground, investment $24 million. Total underground systems would require 25 to 30 times added capital, with rates five or six times those current. Other problems involved were costs to home owners for underground connections, higher costs to municipalities on street work complicated by underground mains, changes in cable to keep pace with increased loads, difficulties in locating and repairing underground plant, and longer outages. The Hartford Electric Light Company, with 750 miles of overhead plant and 130 miles underground, reported that it had suffered more interruptions in its underground system, measured in kilovolt ampere hours, than in its entire overhead system.

THESE facts are fundamental, and might be compiled for emergency presentation by phone and electric utilities everywhere. They are not at all interesting to customers or the public so long as service is uninterrupted. They are then strictly the engineer's worry.

But when people begin crying "Bury the wires!" then they will listen and read, not only to the cold financial facts about rates and costs they will have to pay, but about engineers' foresight in the averting of outages, and for dealing with them when they come. There is a favorable moment for popular education. It does not last long—tomorrow something else in the news captures public attention.

Both telephone and electrical engineers devote much time to designing overhead systems that will stand up under emergencies. In many communities overhead lines now serve both utilities. Sleet, high winds, and other unusual weather conditions are withstood, and customers suffer no outages until trees are uprooted, or heavy limbs dropped onto the lines.

The engineers would like to use more cable overhead, because it is stronger than wires, but there are difficulties in customer



Knowing More about Trees

"We need more knowledge of trees adapted to present-day city streets, with their heavier motor traffic, higher lighting requirements, and fast-growing utility plants. The right trees are species that give shade and beauty to the streets without growing above wire systems at maturity, with root systems that hold fast in small space, and which do not require much trimming because they are compact. Such trees can greatly reduce the wind hazards of falling limbs and uprooting."

connections, and in making normal repairs. Better types of cable are being sought, but cable is still expensive, and lacks the flexibility of wire distribution. Up to date, cable has been used mostly for transmission, a technical point that might be explained to people who ask why the overhead lines are not all compacted in that way. Transmission carries current in mains, like a water system. Wires are the individual pipes to the individual customer.

Emergency organizations for meeting big trouble have little interest for the public until service is interrupted. Then there is an audience for the repair crews that swarm in from areas outside the stricken one. The customers whose phones are dead, and current cut off, can see these crews at work. One power company, thinking to reassure customers, issued bulletins reporting where crews were at work. The customers tried to bribe crews to come and work in their neighborhoods!

Emergency crews, working long hours in bitter weather, are enlarged by men off duty, and from meter reading, sales, customer service, office, and other departments. Emergency crews are flown in from other areas. Critical outages in hospitals and institutions are dealt with, and emergency work directed from dispatching points, to speed up restoration of serv-

ice with the least hardship to all. The customer will be interested until his own service is restored. It is the golden moment when the spotlight of news interest is on.

It does not always take a hurricane to arouse popular demand for the burial of wires.

Home owners in an upper-income neighborhood may agitate for underground plant on the score of appearance, abolishing poles along their shady streets, posts over their spacious lawns. They may organize and bring pressure, but take a different view of neighborhood beauty when asked to sign agreements on connections. Everybody wants underground plant if the company is to pay for it, but everybody signing up for costs is different —the age-old principle of whose ox is gored.

Agitation for underground plant also arises when new transmission lines are projected, a right-of-way complication that calls for different handling. No customer connections are involved, to bring in the lever of self-interest. But the question of increased capitalization remains.

A very interesting case of that kind arose when a transmission project was designed for the San Fernando valley, by the Los Angeles Department of Water and Power. It wound up with a happy ending, but called for patience and public education.

The line was necessary to connect a new steam plant in the valley with department receiving stations, including two new ones. It ran for about 30 miles, carrying 138,000 volts, and the overhead portion extended about 26½ miles, with 3½ miles of underground construction through a closely built-up area. Otherwise the line was to run through orange groves and fields, and across undeveloped mountain territory. In a few places the overhead would run through some new housing developments, and from these places the first objections came. Later on, much stronger objections came from property owners who contended that an overhead line might affect values of property to be developed later, both in dollars and in the character of homes that might be built.

Some of the right of way was already owned by the department, and was being used in part by other transmission lines. For the new project it was necessary to purchase about 21 miles. The decision to build overhead was based on costs. Construction through a heavily built-up area could be accomplished at lower costs by going underground in the streets, instead of purchasing expensive private property. Overhead construction in the mountains and open valley, using purchased right of way, was most economical.

The estimated cost of the line as planned, including purchased right of way, was $11 million. Underground construction for the overhead planned would add $18 million, bringing the total up to $29 million. Annual costs, including operating, maintenance, interest, and depreciation, were estimated at $497,000 for the line as planned, compared with $1,472,000 for an all underground line, a higher cost of $975,000 yearly.

The new steam plant had a capacity of 512,000 kilowatts, enough energy to serve a million people at the then rate of use.

Because of objections raised, the department encountered considerable difficulty before it was able to go ahead with

the line as planned. Eventually the backing of community leaders and organizations was secured when cost figures convinced them that a publicly owned utility must be guided by sound economics, and that it cannot make concessions that tend to favor some property owners over others.

It is interesting to learn that the most predominant fear of opponents, that overhead lines would adversely affect property values, disappeared when the line was built. Subsequent studies showed that there was no effect on property values, or in the character of homes built and sold, or in other land uses.

BASICALLY, three groups were apprehensive, and in opposition. The first were owners who had to move, were compensated, and gave little trouble.

The second group, most difficult, were owners who believed that a high-voltage transmission line in their back yards would depreciate real estate values, and affect desirability for development, set up radio static and work havoc generally. These were baseless fears, as found later, when the line had gone through. Surveys of property values and the character of developments showed that a properly designed and operated overhead transmission line had none of these effects. Property values and desirable improvements were about the same for property near and at distances from the line.

The third group of property owners, largest of all, were not a worry. They were the ones who, through the building of the line in the most economical way, benefited by the stable rates that were maintained. Had construction costs been higher, they would have felt it in their monthly bills. They made no protest against the planned construction, and in most cases probably did not know what might have happened to their bills.

CLOSELY tied in with this postdisaster demand for underground plant is the subject of trees. There is also a favorable time for popular education on city shade trees, from the utility companies' standpoint.

Hurricane damage in the recent visits of ladies from the Caribbean was caused from 50 to 75 per cent by heavy limbs falling onto wires, and by the uprooting of tall trees. Much of this damage would have been averted if utility companies had been permitted to trim trees above their

¶ "HURRICANE *damage in the recent visits of ladies from the Caribbean was caused from 50 to 75 per cent by heavy limbs falling onto wires, and by the uprooting of tall trees. Much of this damage would have been averted if utility companies had been permitted to trim trees above their wires, and to persuade municipalities to remove trees that had become hazards. Nearly everybody loves trees, and many individuals will put up an honest, vigorous fight against trimming or removal. The villain in this plot is always the utility company, because maintenance of its service involves elimination of tree hazards.*"

wires, and to persuade municipalities to remove trees that had become hazards.

Nearly everybody loves trees, and many individuals will put up an honest, vigorous fight against trimming or removal. The villain in this plot is always the utility company, because maintenance of its service involves elimination of tree hazards. Long suspect, its tree work is watched by city authorities and tree wardens, hampered by rules and regulations, and made difficult by lack of understanding on the part of municipal officials as well as the general public.

For lack of understanding, people will put up a fight for trees that are bad citizens.

Probably no tree has more friends and historic sentiment than the elm. Washington taking command of the Army under the Cambridge elm! Americans bristle at the suggestion that elms are wrong trees for city streets, and would be astonished if told that elms and other tall trees are being abused in such locations.

In past hurricanes, when elms were blown over, city fathers repaired the damage by planting more elms, and tall species, not realizing that they were planting trouble for the future.

NEW ENGLAND had a destructive hurricane in 1938, with much tree damage to the power and phone wires of that day, not as extensive as they have become since war's end. There followed a "spasm" planting of young elms, because only a few tree specialists had information about "right" *versus* "wrong" city trees. Twenty years went by, the young elms grew tall, and there was added to their size and brittleness the Dutch elm disease.

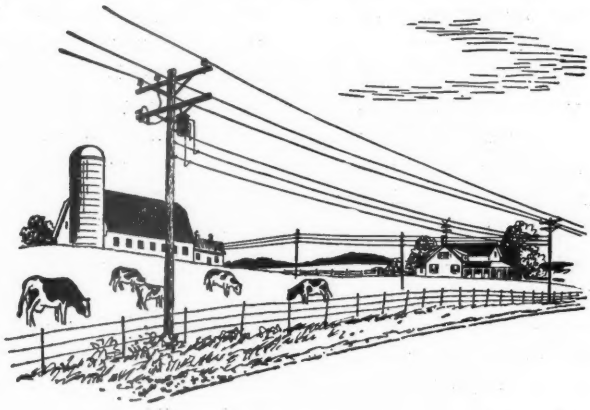
When the new hurricanes struck, tree damage was heavier than had ever been experienced. Moreover, thousands of elms, weakened by disease, had to be removed by municipalities, at costs of $100 to $200 a piece, a heavy, unforeseen item in city budgets.

TALL trees of species that grow above utility wires, and constitute hurricane hazards, have deep-root systems. City tree lawns are often only a yard wide or less. Such trees planted when young have to establish themselves in shallow tree lawns, and under sidewalks. They are perhaps able to secure a root hold too slight for their height and spread, and when abnormal wind pressure comes upon them, go over bodily.

The tall trees—elms, maples, poplars, willows, and other species that make so stately an appearance—need a great deal of water, and go exploring for it through roots. There is water in sewers and house drains, as well as in water mains. The latter are watched for leaks, and are pretty tight, so that roots seldom gain an entry, and leaks are quickly discovered through seepage. But sewers and house drains are jointed, of porous materials, and trees enter through thread roots, build up root systems inside, finding food as well as water.

Householders know root damage to their drains in the form of plumbers' bills for cutting them out, and also for digging and replacing mains. Cutting out roots is a standard city cost item. Roots can burst sewers, causing expensive damage, and an old sewer may become obsolescent through root damage as much as by age.

"The tall trees need friends of the kind who came to the rescue of zoo animals years ago," is the way one specialist puts



Educating Public Opinion

"POPULAR education by utility companies could do much to eliminate hampering restrictions under which they have to work. One eastern power company, with lines in several states and a great many incorporated communities, has a dozen trimming crews constantly at work, under a contract with a tree company. The crews are trained foresters. They work under the supervision of local tree wardens, whose permission for trimming or removal must be obtained, with that of property owners."

it. "The lions and the bears were shut up in cages not much larger than themselves, in early zoos, and visitors watched them pacing back and forth, speculating about what would happen if they got out. By-and-by the public realized that these big animals were being tortured, and popular opinion led to the building of spacious lairs where they could live active lives, and were more interesting to watch. A lot of trees are caged in the same way, in city streets. Modern conditions require more compact varieties, suited to the space, leading happier lives."

IN March, 1955, the first thorough discussion of trees for city streets was held in Cleveland, in the First Street Tree and Utility Conference,[1] attended by several hundred specialists who have to do with trees—city officials, foresters, tree wardens, traffic, safety, police, lighting personnel, and utility executives. The sum total of experience and technical knowledge brought together was impressive. Some of these delegates knew each other mostly as enemies in their work, the city and utility officials. As usually happens

[1] Proceedings of the First Street Tree and Utility Conference, Cleveland, March, 1955 ($2.40).
Second conference, March, 1957 ($3).
Both obtainable from Wilgar Coleman, Edison Electric Institute, 420 Lexington avenue, New York 17, New York.
Trees magazine, 7621 Lewis road, Olmstead Falls, Ohio, published by E. H. Scanlon, deals with shade tree matters.

when such men first get together, it was decided that nobody knew enough about the whole subject—that more knowledge was needed.

This country has spent billions on agricultural research, to develop bigger, redder apples, apartment-size turkeys with extra white meat, hybrid corn, disease-resistant plants, chemicals to fight pests. Nobody eats as well as we do, no other country produces as much food per farm worker. Our scientists have scotched the Reverend Robert Malthus' contention that population would outgrow food production—for a time, anyway.

But very little research has been done on city shade trees. When an imported disease destroyed our American chestnuts, resistant trees were found abroad. Sprays have been effective against the elm disease in cities, but infection remains in the thousands of wild elms in the country.

We need more knowledge of trees adapted to present-day city streets, with their heavier motor traffic, higher lighting requirements, and fast-growing utility plants. The right trees are species that give shade and beauty to the streets without growing above wire systems at maturity, with root systems that hold fast in small space, and which do not require much trimming because they are compact. Such trees can greatly reduce the wind hazards of falling limbs and uprooting.

These trees have still to be found, perhaps in foreign lands, by plant explorers. When found, here or abroad, they must be made known to city officials, and the general public, so that nurserymen will have a market. Back through earlier years when plant explorers were discovering things like the navel orange, many fine shade trees were brought in, to survive only in botanical gardens, if at all, because there was no demand for them. The demand must ultimately develop through popular understanding of city tree requirements in this bustling new era.

To meet the wide range of climate in this country, there will have to be hundreds of "right" trees. For example, the Southern California Edison Company now keeps constantly at work 14 tree-trimming crews, with 11 powerful industrial "monkeys" to reach up into tall trees, covering its 35,000 miles of distribution lines. Some years ago it retained forestry consultants to specify suitable trees to reduce trimming costs. Different trees were recommended for five different zones in its territory. This company, and Pacific Gas and Electric, in northern California, have published tree booklets, and undertaken educational work looking toward the stabilization of their trimming costs, if not reduction.

These costs are climbing at a disquieting rate. In the past ten years Pacific Gas and Electric's yearly trimming expenses have risen from $423,000 to $1,434,000, and projected into the next ten years will be $3.5 million unless controlled by an up-to-date tree program. Such costs, of course, must eventually figure in rates, and are therefore of direct pocketbook interest to taxpayers. Southern California Edison's tree budget is now approaching a half-million dollars, about one-fifth of which goes for tree removals. The removals get into city budgets, for a general working arrangement when a tree is condemned is for the utility company to remove everything above its wires, and for the city to do the rest.

COMES A BIG WIND AND PEOPLE WILL LISTEN

Popular education by utility companies could do much to eliminate hampering restrictions under which they have to work. One eastern power company, with lines in several states and a great many incorporated communities, has a dozen trimming crews constantly at work, under a contract with a tree company. The crews are trained foresters. They work under the supervision of local tree wardens, whose permission for trimming or removal must be obtained, with that of property owners. The whole purpose in the work is to safeguard the community's utility services against high winds, and normal interruptions.

In a recent year its costs were more than $400,000 for trimming 88,000 trees, and removing 4,600 others.

Tall trees cut off street light to such an extent that poles have to be raised to maintain illumination in the interests of safety. There is a demonstrable ratio between traffic accidents and street lighting, and a similar ratio between lighting and crime. What was an adequate system of lighting ten or fifteen years ago may become obsolescent solely through the growth of wrong trees.

AT the Cleveland conference a program for tree education was drafted with the following points to be covered. Simply to read it is to see that it is a utility company job:

1. Become familiar with local tree matters, as related to community problems, getting sound technical advice.
2. Develop strong local interest in basic knowledge of the tree situation among community leaders and civic groups.
3. Provide publicity for better tree policies.
4. Discuss more and better tree planting with civic authorities.
5. Hold public hearings and meetings to inform the public of the situation.
6. Arrange surveys of public trees and make long-range programs for better planting.
7. Present cost estimates and work to secure appropriations.
8. Maintain a permanent shade tree committee.
9. Take advantage of all professional advice obtainable.

A STORY appreciated by utility people involved in wire burial and tree control arguments is told about a woman commuter, caught in a New York traffic jam during the rush hour. She was anxious to get home. Interference in reaching her tunnel bus was coming from other commuters, and automobiles, and right in the midst of the confusion a utility trouble-shooting crew was blocking her way, with its wagon, tool cart, guard rails, cable reel, and working lights.

The lady exploded.

"Now look there! Why can't the electric light company get up to date, and put its wires up in the air, where they belong?"

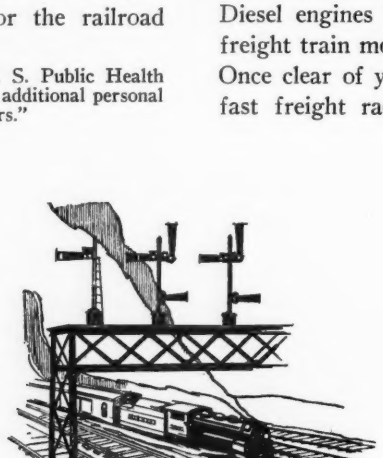
The Rails Shift to "Piggyback"

A more efficient use of railroad and highway transportation facilities is resulting from continued expansion of trailer-on-flatcar operations, commonly called "piggyback." Offering better service for shippers and added revenues for the railroads, piggyback could have far-reaching effects on rates, costs, and our whole system of distribution.

By JOHN T. COLLIER*

THE scene is the loading dock of a busy manufacturing plant that is wholly dependent upon truck transportation for local delivery of raw materials and pickup of finished products. The driver of a husky diesel tractor eases his vehicle up to a big trailer already loaded for intercity movement, and hitches on. Paper work done and load checked, the driver climbs into his cab and pulls out into traffic. But instead of heading for the open road, he drives his rig to a nearby railroad freight terminal that is equipped to handle highway trailers as railroad lading. Here a driver for the railroad takes over, and skillfully backs the tractor-trailer combination up a ramp and onto a designated flatcar where another highway trailer already has been spotted. This is a tricky operation, but one that takes a specialist in this type of loading only a couple of minutes. Even as the prime mover is being uncoupled and driven away, railroad men are tying down the trailer for its piggyback ride on rails.

By sundown, a long string of trailers on flatcars is ready to roll. The arc of a swinging lantern signals a highball; a locomotive's air horn sounds an answer. Diesel engines roar, and a new kind of freight train moves toward the main line. Once clear of yard limits, this piggyback fast freight races through the night at



* Public information staff, U. S. Public Health Service, Washington, D. C. For additional personal note, see "Pages with the Editors."

passenger train speeds, its crew doing the work of more than one hundred truck drivers.

At one of the 160 cities where trailers are loaded and unloaded from flatcars, the process is reversed. A tractor pulls our trailer from its flatcar and delivers it to the receiving platform of the consignee, perhaps in a town not even served by the railroad. Its cargo, undisturbed during the entire door-to-door movement by rail and road in the same vehicle, is now unloaded.

THIS is an abbreviated schematic of piggyback, the movement of highway trailers on railroad flatcars. Some railroad men prefer a more dignified term: trailer-on-flatcar service. But regardless of what you choose to call it, this unconventional method of moving freight—which has spread across the entire continent in the last four years—means better service for the public and increased revenues for the railroads.

Perhaps, in this oversimplified illustration, the shipper and consignee were not even aware of the fact that their goods made the greater part of their journey by rail. As purchasers and users of transportation, time in transit and costs concern them more than the mechanics of the process. But as businessmen, as taxpayers, and as shareholders in the nation's economy, they have a big stake in any development which adds efficiency to industrial performance. Such a development is piggyback.

Although the idea of hauling trailers on flatcars is not new, such service was limited for many years to two or three railroads. Not until the fall of 1956 could a highway trailer ride piggyback from coast to coast. Today, 38 railroads are providing the complete service in this country and Canada, 47 are handling trailers piggyback, and a number of others are studying its possibilities. In 1955, piggyback produced nearly $30 million in earnings for the railroads. More than 4,000 flatcars are in piggyback service, and car builders are busy designing and manufacturing new types of flatcars specifically to haul trailers. The railroads use 3,000 highway trailers of their own in piggyback operations. Many additional flatcars and trailers are on order by the railroads.

LOOKING to the future, the president of one road which is building up substantial piggyback traffic predicts railroad earnings of $100 million a year from this source within a couple of years. Another authority foresees a potential of $600 million a year for the railroads in this service, with about one-fourth of all long-distance truck hauls moving piggyback. Impressive as these forecasts and figures are, they do not spell out the real significance of expanding trailer-on-flatcar operations.

"Fundamentally," said the president of a great railway system in commenting on piggyback, "this is far more than a railroad problem, more than a truck problem, and more than a problem of getting the big trucks off your highways. It goes to the heart of the distribution and freight transportation pattern of all American industries and agriculture." Faster and more flexible freight service at low rates, which piggyback makes possible, certainly will exercise powerful influence over production and marketing throughout the country.

And, in so far as its potential benefits to commerce are concerned, it matters little in the long run whether the

bulk of the trailers which move piggyback are owned by the railroads themselves or by motor common carriers.

EFFICIENT transportation services both by rail and highway are vital to the national economy. Yet thoughtful students of transportation, including leaders in both the railroad and motor truck industries, recognize that public interest demands closer co-ordination between these traditionally competing and potentially more complementing forms of transportation than now exists. It is not uncommon today for motor carriers to go after traffic that is better suited to rail movement, and for railroads to compete for short-haul traffic which could move more economically by truck. Since some traffic does not even pay its way on the wrong medium of transportation and must be subsidized by other freight, the shipping public as well as the carriers stand to benefit from the best possible use of the transportation plant as a whole. Piggyback, which one railroad president describes as a "marriage of conveyances" that "should and will develop into a permanent marriage of convenience between the railroad and motor carrier industries," may prove to be the most important single force in the closer co-ordination of rail and highway transportation.

TRAILER-ON-FLATCAR service already is bringing about faster movement of goods by rail at truck rates, and already is promoting a more efficient use of existing transportation facilities. Regardless of whether or not it ever actually results in a lasting "marriage of convenience" between the railroads and the motor common carriers, it is certain to foster closer co-ordination between important elements of these two industries. To some extent, it is doing so now.

These are the areas in which the real significance of piggyback lies.

The question of whose trailers should be hauled on flatcars is almost as old as piggyback service itself. Historically, trailer-on-flatcar operations date back to 1926. In that predepression year, the electrically operated Chicago, North Shore & Milwaukee Railway became the first to provide such service, moving only its own trailers. In the next dozen years only two other roads established piggyback operations on a lasting basis. These were the Chicago, Great Western in 1936 and the New York, New Haven & Hartford in 1937. Today, these two pioneers are leaders in the field.

The idea of moving highway vehicles by flatcar actually is much older than the piggyback movement of motor trailers which dates from 1926. Military wagons

¶ "ALTHOUGH *the idea of hauling trailers on flatcars is not new, such service was limited for many years to two or three railroads. Not until the fall of 1956 could a highway trailer ride piggyback from coast to coast. Today, 38 railroads are providing the complete service in this country and Canada, 47 are handling trailers piggyback, and a number of others are studying its possibilities. In 1955, piggyback produced nearly $30 million in earnings for the railroads.*"

were hauled by rail during the Civil War, and the Long Island Railroad inaugurated piggyback movement of farm produce wagons in 1879. This service was provided between Syosset and Long Island City, New York. For a while the business thrived, and many wagons were moved over the rails on flatcars in this all but forgotten operation. By the 1890's the demand for this service had dwindled to the point where it was no longer feasible for the railroad to continue the service. Perhaps a more familiar application of the piggyback principle was the once familiar circus train. These operations became so efficient that the German General Staff sent officers to this country to study possible military application of the techniques prior to the first World War.

WHEN the Great Western reached toward the highways for new business two decades ago, it gave a jolt to both the railroad and trucking industries by making the service available to its highway common carrier competitors. In effect, the Great Western offered use of its rails to its competitors to improve their own services with respect to speed and dependability. Protests came from other railroads, motor carriers, and even some shippers. After careful consideration of the railroad's unprecedented arrangement, the Interstate Commerce Commission approved it. Highway vehicles of 17 common carrier truck lines began to move in increasing number between Chicago and St. Paul on Great Western flatcars. Today, 40 motor common carriers ship their trailers over virtually the entire Great Western system.

In designing its trailer-on-flatcar service for common carrier truck operators exclusively, the Great Western established a pattern which so far has not been followed by many other railroads. It is, nevertheless, an arrangement which has paid off for the railroad as well as for the truckers who use it. From the standpoint of the railroad, this co-operative arrangement with motor carriers offers at least two important advantages. First, the motor carriers can provide a substantial volume of traffic which will start moving on rails as soon as piggyback service is offered on an attractive basis. Second, by hauling trailers belonging to other operators, the railroad is spared the necessity of building up its own fleet of highway vehicles.

These advantages appealed to the New Haven when, in December, 1937, that road offered truck operators the chance to get their vehicles out of the congestion so common on New England's weather-sensitive roads. Truckers were quick to avail themselves of the new service, and the New Haven began to share in the profits produced by their heavy volume of motor freight traffic.

MOST of the other railroads offering piggyback service take an entirely different view of the development. To them, the movement of trailers on flatcars provides an opportunity to compete with truckers by offering essentially the same type of door-to-door service at truck-competitive rates. These railroads solicit the business directly from the shipper and move the shipper's goods in railroad-operated trailers. Of the 47 railroads offering piggyback service, only seven haul motor common carrier trailers. However, about 60 per cent of the trailers moving piggyback belong to motor common car-

Competition between Carriers

"No business activity in this country is more highly competitive than transportation. Railroads and motor common carriers compete vigorously between each other and among themselves, mostly on the basis of service. Both rail and highway common carriers are struggling for their economic lives against contract truckers and private truck operators, largely on the basis of cost. To many observers, it appears that the most decisive competitive battle is being waged between common carrier transportation on one side and virtually unregulated contract and private trucking on the other."

riers and are shipped for the most part over those railroads which regularly accommodate truck customers.

PARADOXICALLY, the largest piggyback volume on any railroad to date is over a system which does not offer the service to competing motor carriers. This is the Southern Pacific, which instituted piggyback operations for less-than-carload freight in 1953 and was first to prove that it is possible for a railroad to build up a large volume of trailer-load piggyback traffic independently of the motor common carriers and competitively with them. Today, trailers are moving over the Southern Pacific's lines at the rate of more than 70,000 a year. Except for motor common carrier trailers received through interchange between its motor carrier subsidiary and other truck lines, the Southern Pacific hauls only its own trailers and those of its subsidiary in piggyback service.

The nation's largest railroad system inaugurated piggyback service in July, 1953. Initially, this service on the Pennsylvania Railroad was limited to railroad-owned trailers. The volume of this rail-billed truck-competitive traffic was relatively light, and in March, 1955, the Pennsylvania began tapping into the volume of

motor common carriers by hauling their trailers. Today, like several other roads, the Pennsylvania offers both types of service.

To handle relations with its highway customers, the Pennsylvania has entered into an operating agreement with a "middleman"—Rail-Trailer Company. Organized specifically for such functions, this company handles loading and unloading of trailers in the rail terminals for the truckers. The latter pay for the service.

Later in the same year that the Pennsylvania extended its piggyback service to common carrier truckers, the New Haven established an all-rail piggyback service that competes with motor carriers. This service is restricted to interline movements, and met with no objections from the New Haven's motor common carrier customers using the railroad's local service. Rates are truck-competitive, "identical with those offered by truckers for movement entirely by highway." Both types of piggyback service now help the New Haven to prosper.

TRAILER-ON-FLATCAR operations are by no means universal. A number of railroads, including some of the country's leading systems, do not now offer piggyback service. One of these is the New York Central. After polling common carrier truckers in its territory to determine their interest in such a service, this railroad decided to establish a piggyback operation to haul their trailers. These plans went out the window when the Central's management was changed following a proxy battle in 1954. The new management tried faster freight train schedules as a possible answer to piggyback, and is now in process of designing an all-rail piggyback service that will be strictly competitive with the truck lines.

Some railroads serving the South offer piggyback service—among them, the Illinois Central and the Louisville & Nashville railroads provide all-rail piggyback service—but, in general, piggyback operations are least common in the southern states. Three of the South's major carriers—the Southern Railway, the Atlantic Coast Line, and the Seaboard Air Line Railroad—offer no piggyback service of either type. Operating costs for motor carriers are relatively low in the South, and for this reason there might be less incentive for motor common carriers to patronize piggyback service if it were widely available in this part of the country. The major reason for the paucity of piggyback operations in the South, however, can be found in the attitudes of the railroad managements concerned. These managements, which are as progressive as any in the industry, simply are not sold on piggyback for their lines at the present time. Meanwhile, they are watching the growth of piggyback elsewhere with critical interest.

BESIDES the movement of rail-billed trailer-load freight at truck-competitive rates, another type of all-rail piggyback service that is proving to be a boon to some railroads is for less-than-carload (LCL) shipments. During the last thirty years the railroads have lost a substantial part of their LCL business to trucks, and some to freight forwarders who consolidate shipments for carload movement at lower rates. To a large extent, the ability of truckers to compete successfully with rail schedules is attributable to relatively time-consuming and costly operations at railroad terminals. These operations eat

up a disproportionate part of LCL revenues, especially in the case of short-haul traffic. As a result, many LCL shipments lose money for the railroads.

There is a growing conviction among railroad men, however, that all LCL service need not be operated at a loss—any more than all passenger service must run forever in the red. One possible answer to the LCL problem is piggyback. By eliminating the shifting of freight between truck and boxcar, and by avoiding the expense and delay of freight house handling, piggyback is winning some of this LCL traffic back to the rails—at a profit.

LEGALLY, piggyback operations are on firm ground. Not even the right of railroads to offer rail-billed piggyback service at the same rates truckers charge for their over-the-road service is open to serious challenge. Initially, however, truck interests vigorously opposed the all-railroad type of service. When several railroads in the East proposed such service, the Interstate Commerce Commission suspended the tariffs they had filed. Later the commission allowed these tariffs to become effective subject to further investigation. The commission's hearing in this proceeding concluded with the withdrawal of motor carrier opposition. In the words of the truckers' counsel, "experience shows that service does not offer serious threat to truck operations."

WITH a number of railroads interested in putting money into piggyback operations, it was evident that further clarification of regulatory aspects was needed. Accordingly, in 1953 the New Haven Railroad took the lead in seeking from the commission a declaratory order covering what may or may not be permissible in trailer-on-flatcar operations. Twenty questions concerning legal and other matters incident to piggyback service were addressed to the commission by the New Haven on behalf of itself and other interested railroads. These were reframed by the commission into 12 questions, which it treated in a decision rendered July 30, 1954. This decision opened the way for the piggyback expansion which followed, enabling carriers to invest in the service with greater assurance.

The commission ruled that motor vehicle transportation operated by railroads as a part of piggyback service constitutes terminal area collection and delivery that is incidental to railroad transportation. Such service may be performed without a motor carrier certificate.

Joint division of through rates may be

¶ "TODAY, *transportation in the United States is on the threshold of great changes. New cost factors and capabilities in highway transport are certain to revise existing elements of competition. A whole new national transportation policy—long overdue—may become a reality. Beginning now, and in the years immediately ahead, it is of crucial importance to the railroads that they expand types and patterns of service that meet the needs of shippers and the demands of highway competition. Piggyback service is no panacea.*"

made between railroads and truckers. However, arrangements to substitute piggyback movement for highway movement of trailers may be made available only to motor common carriers. Under such arrangements, motor common carrier tariffs reserve the right to substitute piggyback movement for highway movement unless otherwise directed by the shipper.

The approach to piggyback by the railroads generally has been to proceed with caution. A widely held outlook in the industry is reflected in the 1954 annual report of one railroad stating that "expenditures for facilities necessary to perform this new service were held to a minimum and the facilities, to a degree, are temporary in nature, awaiting future development of the venture." Elaborate terminal facilities are not required for piggyback operations, and much of the rolling stock now in use consists of conventional flatcars with suitable tie-down devices installed.

However, as piggyback volume grows, railroad investments in terminal facilities and specially designed flatcars are also increasing.

One reason why railroads have not stampeded hastily into the piggyback business has been a natural apprehension on the part of traffic men regarding the effects of piggyback on the railroad rate structure. There was fear—not yet entirely dispelled—that rail movement of freight in highway trailers would undermine the rate structure, and that carload freight now moving at a profit would be diverted into piggyback trailers hauled for less revenue by the railroads. Even some enthusiastic piggyback partisans agree that this could happen if piggyback service were offered universally to trucking "wildcatters" and private shippers.

The viewpoint which seems to be emerging as the dominant one, however, is that piggyback operations—even in conjunction with motor common carriers—are producing new traffic that the railroads can get in no other way. Furthermore, this traffic is profitable. In the case of all-rail piggyback service, the Interstate Commerce Commission has investigated many complaints that the rail rates were not compensatory, and that the service amounted to destructive competition. On the basis of its own analyses, the commission has held that these piggyback operations are compensatory to the railroads.

In offering piggyback service to common carrier truckers, railroads are foregoing a part of the potential revenues in return for being relieved of the costs of solicitation, owning and operating vehicles, and handling local pickup and delivery. Compensation for the railroads for their smaller cut of the total transportation charges comes in the form of the increased piggyback volume which common carrier truckers are able to provide.

In restricting their piggyback operations to the movement of their own trailers—which continues to be the preferred method in the railroad industry—the railroads pass up the opportunity for immediate volume from motor common carrier sources in favor of a much slower growth of the all-rail service, and the use of that service as a competitive tool.

No business activity in this country is more highly competitive than trans-

Co-ordinating Competitive Services

"EFFICIENT *transportation services both by rail and highway are vital to the national economy. Yet thoughtful students of transportation, including leaders in both the railroad and motor truck industries, recognize that public interest demands closer co-ordination between these traditionally competing and potentially more complementing forms of transportation than now exists. It is not uncommon today for motor carriers to go after traffic that is better suited to rail movement, and for railroads to compete for short-haul traffic which could move more economically by truck.*"

portation. Railroads and motor common carriers compete vigorously between each other and among themselves, mostly on the basis of service. Both rail and highway common carriers are struggling for their economic lives against contract truckers and private truck operators, largely on the basis of cost. To many observers, it appears that the most decisive competitive battle is being waged between common carrier transportation on one side and virtually unregulated contract and private trucking on the other. In this struggle, the rail and motor common carriers may some day find that the mutual interests which they share outweigh the differences which separate them.

Within thirteen years, if this administration's plans are carried out, the competitive balances of today will be altered drastically by a vast network of 41,000 miles of toll-free superhighways built at a cost of $33.1 billion, put up mostly by the motoring public through excise taxes. These super roads, linking every market area in the country, will be available for the use of truckers. Substantial reductions in truck operating costs and running times will follow. These savings in time and money will benefit not only motor common carriers, but also will offer strong inducement for shippers to move their own freight in their own trucks.

No one can forecast with certainty the

effects of this vast addition to national transportation resources upon piggyback operations—or upon the railroad industry itself. The last dozen years have witnessed spectacular advancements on the nation's railroads. Train speeds have been stepped up and costs reduced through adoption of diesel and diesel-electric motive power and new lightweight rolling stock. Track capacity has been increased through installation of advanced traffic control and communications systems. Freight yards, terminal operations, and even administrative procedures have become mechanized.

PIGGYBACK fits very well into the unfolding picture of railroad progress. It is fully compatible with today's high-speed diesel freight, which has swept away the former concept of the longer freight train. It meets requirements for flexibility in freight service, particularly in reaching off-line shippers. It provides a sure means for reducing loss and damage claims—thereby making friends instead of enemies among shippers. It provides a new incentive to speed "interlining" of freight cars. It cuts handling costs and—where revenue is received for hauling empty trailers—it reduces empty car mileage. From the standpoint of the shipper, its speedier delivery times are in keeping with modern business trends toward smaller inventories—particularly when credit is tight.

The practice of hauling trailers on flatcars is operationally sound, it is good business for the railroads, and it is an economically desirable use of transportation resources. Undoubtedly, it is here to stay—although in precisely what form is not yet clear.

Differences among railroads with respect to types of piggyback service to be offered bear evidence of the highly controversial nature of the entire development. To summarize these differences: Some railroad officials hold that it should be operated only in conjunction with motor common carriers; the majority feel that it should be offered directly to shippers only by railroads; and some believe that its proper place is in LCL service. On two extremes, there are those who would move trailers belonging to anybody, and those who would move no trailers at all.

Opinions are equally divergent in trucking quarters. The Private Truck Council of America, quite understandably, urged the Interstate Commerce Commission to make piggyback service available to all truck operators. It is highly doubtful if this idea has any supporters among common carrier truckers, whose attitudes toward piggyback vary widely.

TODAY, transportation in the United States is on the threshold of great changes. New cost factors and capabilities in highway transport are certain to revise existing elements of competition. A whole new national transportation policy—long overdue—may become a reality. Beginning now, and in the years immediately ahead, it is of crucial importance to the railroads that they expand types and patterns of service that meet the needs of shippers and the demands of highway competition. Piggyback service is no panacea. But to the individual railroad, building this service in its own way, piggyback opens new possibilities for getting potentially large volumes of freight off our overloaded public highways and back on the rails.

Why Utilities Must Advertise

This article explains the various objectives accomplished by utility advertising, some of which are quite necessary and important from the standpoint of good operations and public interest.

By JAMES M. STAFFORD, JR.*

"THE electric companies are faced with only two problems," said the chief executive of a midwestern utility in an address made about five years ago, "to stay in business . . . and to make a profit."

What he said then is true today. It will be the same tomorrow and ten years from now. The fact that it will be no more true of utilities than of other industries makes the future none the easier to face.

The predicament of the utility industry is in some measure akin to that of Brer Rabbit, who was "bleeged to clamb de tree" despite his lack of propensity for doing so. The utilities are "bleeged" to grow with the nation's economy. They have a bull (not a bear) by the tail. They have no alternative but to expand—that is, if they are to remain members of our free enterprise economy.

THERE's a debate going the rounds—sometimes mild, sometimes otherwise—as to whether advertising is a *profession* or a *business*. For purposes of this article, let it be stated, it is a *business*—a pretty serious and important business.

When we talk about "profits" in the utility industry, then we sound an awful lot like business. So if advertising is a business and utility operation is a business one should anticipate that sooner or later

* Director of advertising and publicity, Kansas City Power & Light Company, Kansas City, Missouri. For additional personal note, see "Pages with the Editors."

the two might meet on some reasonably common ground.

ALTHOUGH congressional committees may assume the prerogative of asking certain types of questions of, say, General Motors, we doubt anyone has asked that successful firm why it finds it desirable or necessary to advertise. Nor does Macy's care to ask Gimbel's. Yet it would not be too great a surprise should a Congressman, or Macy's, or Gimbel's, or (pardon the suggestion) a utility president, inquire as to why a "monopoly" should need advertising in its operations. (One of my associates chimes in to say that various governmental agencies in truth *have asked* and *do ask* the question with some regularity. This same associate deposes that he is acquainted with at least one utility executive with an inquiring mind and has heard it gossiped about that the number of such minds is on the increase.)

Utilities must grow to live. Volume is the means and volume is the end. Advertising has long been accepted as both the tool and the servant of mass production and volume sales. If advertising were not economically valuable we simply would not have it at all. American business invested $10.5 billion in it in 1956. By contrast, total revenues received by all investor-owned electric utilities in the United States last year amounted to about $7.5 billion.

Average sales per residential electric customer were 677 kilowatt-hours in 1935. In 1956 the average usage was 2,980 kilowatt-hours, and the predicted usage in 1975 is 10,000 kilowatt-hours per home. But not even the most enthusiastic forecaster assumes that such new and greater electrical loads will come automatically.

INCREASING domestic use of electric service through the years up to now has come about by reason of intensive sales promotion and advertising of appliances and lighting and of the economical uses of electricity. It was the result of pioneering on the part of appliance, lamp, and lighting equipment manufacturers who were encouraged by the co-operation of electric companies anxious to build load. These co-operative efforts were responsible for widespread saturation of the electric refrigerator, the electric range, window air conditioners, and many other devices. Also—and this is by no means insignificant—the usage grew because managements were foresighted enough to provide residential electric rates which lent themselves to promotional treatment.

Intelligent utility advertising can serve to build sales volume as well as play an important rôle in building load selectivity, both as to types of load among the general customer classifications and as to characteristics of load within the various classifications. Advertising can serve to meet increasing competition—the direct competition of gas (or electricity) and the indirect competition of manufacturers and retailers of nearly everything else for consumer dollars.

So, in order to keep the business we have already, to build its volume, and to enable us to make a "profit"—we must advertise consistently.

EVERY corporation, to more or less degree, owes it to its stockholders, employees, and, indeed, its customers to keep them properly informed as to its opera-

tions, policies, and plans. An understanding public has made the difference frequently between success and failure of a company. The integrity of a firm built carefully through the years by considerate customer dealing and thoughtful advertising has truly saved the day when, for one reason or another, disaster or near disaster has struck.

A UTILITY has all of the reasons other businesses have for building adequate public understanding, plus a great many more. Its status as a quasi monopoly makes its problems both diverse and complex. The fact that manufacture and delivery of a product like electricity is complicated and the product itself a force rather than a tangible commodity, coupled with the circumstance under which the customer feels he *has* to do business with us, all of these things and many others compound the over-all problem of achieving utility customer understanding.

In the electric business, for example, it should be considered valuable for customers to understand that electricity is "made to order," that it cannot itself be inventoried. On this circumstance hangs a multitude of problems as to the financing and operation of an electric company, matters such as the quantity and cost of equipment with which to meet peak demands of the day as well as of the seasons. A friend of mine in another business gave me a lift home one afternoon a few years ago. As we passed one of my company's large substations, he said: "Jim, how much electricity can you store in one of those tanks?"

My immediate impulse was to laugh, but I didn't! Truthfully, I was chagrined and embarrassed to realize anew that we had not done enough to publicize the fact that electricity cannot be stored in a box, bucket, barrel, or tank, that it is manufactured on the instant it is required. Should we face in the future the misfortune of losing the services of a generating unit, I am confident my friend now will be inclined at least to listen more patiently to our explanation.

TAKE another unusual aspect of our business—one with which those who make electricity are well acquainted but with which only a small percentage of the public is familiar—the use of water in a steam-electric generating plant for condensing purposes. It would be advantageous if customers knew that location of a power plant on the bank of a river did not mean that it was a hydroelectric installation.

In time of drought when, for example, city water supplies may be low,

¶ "UTILITIES *must grow to live. Volume is the means and volume is the end. Advertising has long been accepted as both the tool and the servant of mass production and volume sales. If advertising were not economically valuable we simply would not have it at all. American business invested $10.5 billion in it in 1956. By contrast, total revenues received by all investor-owned electric utilities in the United States last year amounted to about $7.5 billion.*"

it would be helpful if the public knew that the electric company, although generally requiring as much water for its condensers each day as all of the city's water customers, does not *consume* the water.

These are only two instances of things basic in the electric power production business. There are many more that it would be well for the industry if the public understood them—and remembered that they understood them. If the need for public information is increasingly great, how can we go about the job of supplying it?

The answer should be obvious: Advertising.

ADVERTISING is the most economical way to get ideas across to large groups of people. How else can you transmit ideas so easily, so quickly, so inexpensively to so many tens of thousands? Do you call on them personally and individually? If so, you are *really* talking about a lot of expense. Do you keep your employees informed of company problems and expect *them* to do the whole job of keeping customers informed of policies and plans? (As priceless as adequate employee information is at all times, it alone cannot do the necessary public information chore.) Surely, with times as they are and problems as they exist, no utility executive wishes to suggest that his company do no advertising at all.

These are the broad assignments which competent advertising can assume—should assume—for the utility company:

1. To acquaint customers and the public generally with facts about the business in order that they may acquire a better understanding of it.
2. To increase sales of its services, and to keep the business it has.
3. To present its rôle as a good citizen of the community.
4. To provide security holders and financial analysts with adequate information on current operations and future prospects.

PRESENTED below are a few brief statements on the subject of utility advertising made by those whom I consider to be among the country's outstanding utility advertising executives:

"Volume sales is the lifeblood of our business. We must continue to sell more electricity to offset the cost of producing it. We must continue to keep the price attractive so that people *can* buy more of it. And we must continue to advertise it so people will *want* to buy more of it."

—ROBERT H. BRIDGES, *director, advertising and public relations, Cleveland Electric Illuminating Company.*

"An electric company advertises for two basic reasons: (1) to make friends for the company; and (2) to increase revenues from every class of customer. . . . In this changing world, we must keep up with the parade . . . we cannot stand still. We must sell more electricity constantly because our expenses are increasing year after year."

—HERBERT H. BRIGGS, JR., *manager, advertising and publicity, Duquesne Light Company.*

"Utility advertising averages about one-half of one per cent of gross revenue . . . a very small expense for a very great return. In fact, if this expense were eliminated and subtracted from the electric rates, no customer would see it because it

The Task of Utility Advertising

"It should be recognized that, for the most part, the utility's advertising dollar is called upon to perform almost unbelievable gymnastics in days such as these. Not only must it be stretched to meet the requirements of institutional and sales promotion publicity but also it must compete for consumer attention at a time when such competition is at a new high. On the other hand, I submit that advertising managers are as good businessmen as other department heads in a utility and are quite capable of finding the best way to employ company advertising dollars."

is only five cents on a $10 electric bill. . . . Utilities advertise to improve their sales, their efficiency, their public relations, and their standing in the community."

—Richard D. Furber, *director, public information and advertising department, Northern States Power Company.*

"The most powerful force in America today is public opinion and public opinion has been the most powerful force ever since our country was founded because in this country free people—the citizens—still rule. Public opinion is formed in many ways, but it is always the result of some kind of communication to the public. If we all want to stay in business let's line up this powerful force on our side. The utility advertising man can help."

—Paul L. Penfield, *director of advertising, Detroit Edison Company.*

"If any criticism can be lodged against utilities in connection with their advertising, it is because their advertising budgets and the effectiveness of their efforts have been too limited. We owe it to our customers, our employees, and to those who have invested their savings in our business to do everything within our power to protect the business."

—E. N. Pope, *director of advertising, Carolina Power & Light Company.*

"The utility has no competition in the commodities it sells, but it does have competition in the *services* they perform. Competition knows all the tricks of selling, and they are not under governmental regulation. When a utility is large, it has a large public relations job to do. Our advertising must sell our products (services), sell the company as a financial institution in order to attract needed capital for expansion, and sell the company itself as an institution and as a citizen of the community."

—A. JAMES MCCOLLUM, *manager, advertising department, Pacific Gas and Electric Company.*

"We have found that it is just good business to keep the public informed. The more the public knows about telephone service, about our policies, problems, and personnel, the more useful the telephone service becomes to them and the better the service is for everybody. Therefore, it is to the public's interest as much as to the company's interest to have the public so informed. The principal and most useful attributes of advertising are its economy, its speed, and its accuracy. Its two chief purposes are to inform and to persuade."

—RANDOLPH K. WHEAT, *assistant vice president, Chesapeake & Potomac Telephone Company.*

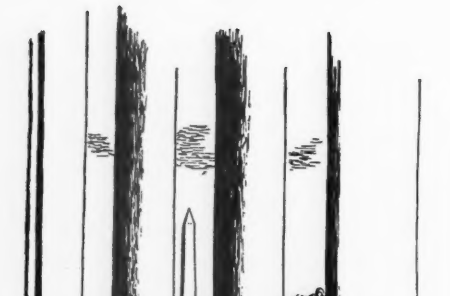
WHEN Ray Martin, director of advertising, Consolidated Edison Company, was asked to answer the question "Why Does Con Edison Advertise?" he divided his answer into five parts:

1. To increase our sales of electricity and gas.
2. To inform the public about ways and means to use electricity and gas to best advantage.
3. To inform the public about the company and its plans for the future.
4. To present the advantages of employment with Con Edison.
5. To present the desirability of Con Edison as a place to invest money.

"Basically, Con Edison advertising has a big part to play in each of the fields of providing good service at low cost, of keeping the public informed, and of fostering mutual understanding between our customers and ourselves," Martin says.

YES, utilities *must* advertise. Their quasi-monopoly characteristics, their "affliction with the public interest" cannot excuse them from exercising adequate judgment and foresight in making use of tools which other businesses continue to find indispensable to growth and profit. In fact, there is ample justification for the conclusion that the utility which does *not* advertise intelligently and competently may very well lay itself open to the criticism of regulatory bodies.

It should be recognized that, for the most part, the utility's advertising dollar is called upon to perform almost unbelievable gymnastics in days such as these. Not only must it be stretched to meet the requirements of institutional and sales promotion publicity but also it must compete for consumer attention at a time when such competition is at a new high. On the other hand, I submit that advertising managers are as good businessmen as other department heads in a utility and are quite capable of finding the best way to employ company advertising dollars.



Washington and the Utilities

Hell's Canyon Appeal Ends

WITH only Justice Douglas noting a dissent, the U. S. Supreme Court on April 1st refused to review the long-drawn-out appellate litigation over the three licenses granted by the Federal Power Commission to the Idaho Power Company for hydroelectric development on the Snake river in the Hell's Canyon area. The action of the highest court was hardly a surprise, in view of the fact that, despite noisy protestations about unlawful and arbitrary action by the Federal Power Commission, the opponents of these licenses have lost every round since the case began before the FPC.

The opponents include the Hells Canyon Association and the National Rural Electric Co-operative Association in addition to farm and labor groups. They have been insisting that the Federal Power Commission should have denied these licenses to the Idaho Power Company because a proposed single high dam to be built by the federal government at the Hell's Canyon site would result in more "comprehensive" development, more and cheaper power, and so forth. All these arguments were threshed out repeatedly and at great length before a patient Federal Power Commission examiner, who let the hearings run many months to accommodate the voluminous and sometimes rambling testimony and arguments of the opponents of the private company licenses.

WHEN the commission examiner finally decided to end the hearings after they had gone to record length, he recommended the issuance of three licenses to the Idaho Power Company at the respective sites of Brownlee, Oxbow, and Hell's Canyon for three smaller dams. These sites, of course, would be flooded out if the single high dam were built by the federal government. But the examiner pointed out that Congress had repeatedly failed to pass enabling legislation, which had been continuously before it for a number of years, and which would have authorized a federal high dam. And since the electric power was needed in the area and no one knew that the federal government would ever act, there was no reason for holding up the Idaho Power Company, which appeared ready, willing, and able to go ahead with its program.

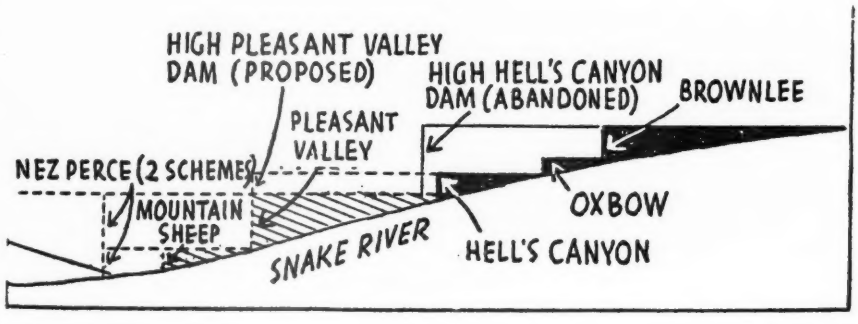
THE second round was fought out before the full Federal Power Commission; and it was equally windy in arguments and briefs. The full commission unanimously went even further than the examiner, pointing out that the company's 3-dam program had advantages in economy and efficiency over the single high dam proposal (9 PUR3d 405). The third round came before the U. S. circuit court of appeals for the District of Columbia, which assigned the case to a three-judge panel. The panel unanimously upheld the FPC, pointing out that the case was virtually on all fours with the precedent already established by the U. S. Supreme Court decision in the celebrated Roanoke case, decided in 1953 (97 PUR NS 129).

In that case the Federal Power Commission license issued to the Virginia Electric & Power Company to build a hydro dam on the Roanoke river had been similarly attacked, not only by government power groups but by the then Secretary of Interior, Oscar Chapman, as conflicting with so-called "comprehensive" development. There again the argument was that only the federal government could undertake a truly "comprehensive" program. But, again, Congress had shown no interest in the matter and the site would probably be idle today if the company had not applied for the license.

The fourth round came when the Hells Canyon Association, dissatisfied with the decision of the three-judge panel of the court, appealed to the full nine-judge court of the U. S. circuit court of appeals of the District of Columbia. Again the decision was unfavorable and unanimous—affirming the three-judge panel.

MEANWHILE, a Hell's Canyon bill to authorize federal development of a single high dam actually got out of committee in the U. S. Senate and was defeated on the floor in 1956 by a vote of 51 to 41. But the Hells Canyon Association and the National Rural Electric Cooperative Association were determined to play out all their cards. An appeal was taken to the U. S. Supreme Court for a review of the lower court's decision. And thus the fifth round ended in an unbroken succession of defeats by the appellants, when the court turned down the application for review without even an argument.

Meanwhile, the Idaho Power Company, so confident of the outcome that it did not hesitate to waive any damages from the federal government in case its licenses should be ruled invalid, has gone ahead with construction under the licenses. Such a waiver was required a year ago by U. S. Supreme Court Justice Black in turning down a supplemental effort by the Hells



Canyon Association and others, seeking an injunction to halt construction by the Idaho Power Company, pending final outcome of the appeal.

Justice Black, who, incidentally, joined the majority in finally upholding the Federal Power Commission licenses, required the company to give assurance that if the licenses were finally upset and the federal government should subsequently undertake a conflicting program, there would be no claim for money damages as the result of construction work under the licenses. The company's attorney evidently thought there was little chance of such a development.

What Now on Hell's Canyon?

HELL'S CANYON is a mile-deep gorge on the Oregon-Idaho border through which the Snake river flows on its way to join the Columbia. In February, 1950, the Army Corps of Engineers submitted to Congress a broad plan for developing the Columbia and its major tributaries. A key project in the plan was the multipurpose high dam in Hell's Canyon.

The dam would have been 722 feet high, with a 93-mile-long reservoir capable of storing 3,800,000 million acre-feet of water for flood control, power production, and other purposes. An acre-foot is enough water to cover an acre of land to a depth of one foot. Construction of generators with an eventual capacity of 900,000 kilowatts of electric power was contemplated.

Bills for the project were introduced in the 82nd, 83rd, and 84th Congresses but failed to pass.

IT was December, 1950, the Idaho Power Company applied for the licenses to build three low-level dams in Hell's Canyon. The Federal Power Commission granted the 50-year licenses on August 3, 1953. Secretary McKay had withdrawn on May 5th his predecessor's opposition to the power company's application. The power company's project contemplates an expenditure of around $250 million, with an ultimate power capacity of 1,175,000 kilowatts and flood-control storage of one million acre-feet.

The refusal of the U. S. Supreme Court this month to interfere with the FPC decision licensing private development of the Hell's Canyon site in Idaho helps clarify the whole complicated issue of further power development on the Snake river. A few days before the U. S. Supreme Court denied the review, the FPC turned down a request to reopen recent hearings on a plan for private development of the Pleasant Valley site in order to receive, in evidence, a letter from Interior Secretary Seaton with reference to another site for a possible high federal dam

on the Snake. The Interior Department has informed a Senate committee, now considering a bill to authorize a high dam at Hell's Canyon, that it is unalterably opposed to this project.

THERE are two positive results expected now that all legal obstacles to private company development in the Hell's Canyon area have been removed. First, the way is clear for the administration to come forward with a concrete proposal of its own for basin-wide development on the Snake. This could take the form of a "partnership" plan or a federal high dam project at some other point on the Snake river. That one or the other is under serious consideration was evident from Secretary Seaton's request that the FPC delay any decision on private development of the Mountain Sheep-Pleasant Valley site. But Seaton understandingly hesitated to speak his mind on this until the highest court had disposed of the Hell's Canyon license appeal.

The U. S. Supreme Court's action should bring to an end the much overplayed issue of Hell's Canyon, in which both the administration and the electric utility companies have been accused of unlawfully trying to exploit a natural resource for private gain.

Producer Bill Expected

STILL waiting in the wings of the Washington scene in early April was a new natural gas bill which everyone had expected would be on view long before that date. Of course, there have been several bills introduced along the lines of the old Harris-Fulbright measure which was vetoed last year, and several other versions by everyone interested—the problem of relieving gas producers from full control of the FPC under the Natural Gas Act. But it is understood that none of these retreads was The Bill. In other words, they had little steam behind them and were introduced more for effect than expectation of action.

Following the Texas senatorial election, however, with the Democratic Senate leadership secure for the present, both the Democrats in Congress and the administration may now agree to break the stalemate. Up to now, both have been acting out a rather amusing Alphonse-Gaston routine. It is known that a specific bill is under study at the White House and that it is quite different in some respects from the so-called "compromise" bill circulated from gas industry sources.

Administration advisers have insisted, in fact, that there be no similarity between any bill from the gas industry source and a bill which might be endorsed by the administration. As far as could be learned, the "White House draft" would retain a measure of FPC regulation of all gas producers, but allow considerable flexibility for the FPC in the use of rate-making standards and easing some of the burdens of traditional regulatory controls.

According to the transcript of President Eisenhower's press conference of March 27th, he stated in part:

> . . . I don't know that we will put up a bill. Certainly, we will say exactly what I said when I vetoed the other bill, that legislation in this field is absolutely essential. . . . I thoroughly believe that the pipeline is a public utility and must be treated as such, including its right to fix the price at which the gas enters that pipeline. I do not believe that the federal government is wise in trying to go within a state and fix the cost or to fix the price . . . at the wellhead.

Telephone and Telegraph

New York Bill Killed

THE New York senate finance committee recently killed a bill designed to block a $55.4 million telephone rate increase. The vote was 13 to 7, and the legislature adjourned without further action.

In a formal statement, the thirteen Republicans who voted to kill the bill said:

> We do not believe that we should abandon long-established state policy and desert principle for temporary expediency.
>
> We are confident that, with wise and patient administration, the public service commission can, within the tested framework of existing law, safely steer a course which will neither "starve" the utilities nor enrich them against the interest of the consuming public.

The bill had been approved by the assembly. Its passage had been urged by Governor Harriman in his annual message and in several subsequent special messages. The public service commission, a bipartisan agency, had been campaigning for it.

Under the bill the public service commission would have been relieved of the need to consider the cost of replacing the telephone company's plant in arriving at its value for rate-making purposes. In a 1956 decision involving the New York Telephone Company, 12 PUR3d 399, the

AVERAGE MONTHLY LOCAL FARM TELEPHONE BILLS, BY REGIONS, JULY, 1947-56[1]

Region	*1947-49 Average*	*1951*	*1952*	*1953*	*1954*	*1955*	*1956*
	Dol.	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*	*Dol.*
New England	3.17	3.83	3.91	4.11	4.23	4.35	4.60
Middle Atlantic	2.76	3.24	3.32	3.39	3.39	3.50	3.73
E. N. Central	2.22	2.81	2.97	3.23	3.32	3.41	3.54
W. N. Central	1.81	2.41	2.59	2.71	2.75	2.86	2.99
S. Atlantic	2.58	3.22	3.48	3.61	3.75	3.86	4.07
E. S. Central	2.50	3.08	3.18	3.23	3.42	3.50	3.83
W. S. Central	2.02	2.63	2.95	3.25	3.46	3.64	3.88
Mountain	2.65	3.02	3.43	3.55	3.74	3.91	4.14
Pacific	3.08	3.64	3.82	4.00	3.93	4.15	4.27
United States	2.29	2.87	3.06	3.24	3.33	3.46	3.66

[1] The survey made in July and August requested data based on the last bill. This was generally a bill for a period ending in late June, July, or early August.

court of appeals held that the commission must consider reproduction cost.

The majority statement quoted from the court's opinion that reproduction cost "is by no means controlling" in arriving at a valuation, but that it must be considered "among other things." The committee majority also noted that the State Constitutional Convention in 1938 refused to recommend such a change as the bill proposed. Cited further was a *New York Times* editorial of March 9th noting that reproduction cost was taken into account in fixing the value of telephone property for taxation purposes.

The company is seeking monthly rate increases of 50 cents on private home telephones, 65 cents on party-line telephones, and $1.50 on business telephones.

THOMAS JEFFERSON MILEY, executive vice president of the Commerce and Industry Association of New York, Inc., sent to Senator Mahoney, Republican majority leader of the state senate, a telegram saying that "private enterprise in this state wholeheartedly applauds your conscientious action in defeating the bill" affecting telephone rates.

After the session adjourned, there was speculation that Governor Harriman might be intending to call a special session later this year to force action on the telephone rate increase.

Senator Mahoney challenged Governor Harriman to debate "any time, anywhere" the merits of the telephone bill which failed to pass in the final days of the legislative session. Senator Mahoney said the governor's contention that the bill was necessary to block a $55 million increase in telephone rates was "patently erroneous." He said the Public Service Law charges the public service commission with the responsibility of determining just and reasonable rates in telephone and railroad proceedings.

Farm Phone Bills Advancing

PAYMENTS by United States farmers for local telephone service in July, 1956, averaged $3.66 a month, or 6 per cent more than a year earlier, according to an annual survey made by the agricultural estimates division of the Agricultural Marketing Service. Total monthly charges for both local and long-distance service averaged $5.45 compared with $5.14 for July, 1955. This increase was accompanied by continued and rapid improvement in the class of telephone service received by farmers.

Increases in average local farm tele-

TYPE OF TELEPHONE SERVICE ON FARMS, BY REGIONS, JULY, 1956

Region	*Dial Service P. Ct.*	*Battery Service P. Ct.*	*Magneto Crank-Type Service P. Ct.*	*Private Line P. Ct.*	*2 to 4 Parties On Line P. Ct.*	*5 to 8 Parties On Line P. Ct.*	*9 or More Parties On Line P. Ct.*
N. Eng.	76	13	11	10	42	38	10
M. Atl.	61	25	14	7	20	51	22
E. N. Cent.	51	16	33	2	14	46	38
W. N. Cent.	35	13	52	2	12	45	40
S. Atl.	69	16	15	5	31	47	17
E. S. Cent.	65	25	10	4	32	59	5
W. S. Cent.	54	25	21	5	28	57	10
Mount.	57	30	13	5	24	46	25
Pacific	83	11	6	9	34	35	22
U. S.	55	18	27	4	22	48	26

phone bills during the year ended in July, 1956, occurred in all regions and in practically all states, with increases being fairly consistent throughout the United States. As of July, 1956, the highest bills for local telephone service were paid by farmers in the New England states, an average of $4.60 per month, and in the Pacific and Mountain regions where payments averaged $4.27 and $4.14, respectively. The lowest by far was $2.99 per month in the West North Central region where there are still a large number of farmer-owned lines. Much of the regional variation in cost is a reflection of the differences in type and quality of service provided to farmers.

ON July 1, 1956, about 55 per cent of the farmers with telephone service had dial phones, 18 per cent had battery telephones, and 27 per cent had magneto or crank telephones. This indicates a sharp increase over the last three years in number of dial phones on farms and a nearly corresponding decline in number of magneto (crank-type) phones. The number of battery telephones on farms has declined only slightly. In July, 1955, about 51 per cent of the farm phones were of the dial type while in July, 1954, 45 per cent were dial. In 1954 an estimated 20 per cent of the farmers with telephones had battery service and 35 per cent had magneto service. Practically all of the new telephones being installed on farms (per cent of farms with telephones has increased from 38 in 1950 to 52 in 1956) are dial and many exchanges and systems have been rebuilt with dial equipment, new poles, and lines.

REA Loan Changes Approved

PROPOSED changes in requirements for rural telephone loans were endorsed by the Rural Electrification Administration's telephone advisory committee, meeting in Washington March 25th and 26th. The committee currently is composed of seventeen representatives of independent commercial and co-operative telephone systems and the Bell system.

In their report to REA Administrator David A. Hamil, the advisory group said that proposed changes probably "will expedite the extension of telephone service in rural areas while strengthening loan security for the government."

The changes in loan policy would require the establishment of a 10 per cent net worth floor for all borrowers, impose certain restrictions on the payments of dividends, and establish constructive managerial controls on both commercial and nonprofit systems when the minimum net worth requirements were not met. Co-operatives or mutual companies would be required to collect membership fees of at least $10 from all new subscribers rather than to provide cash equity of from $25 to $50, as at present, and co-operatives would have to provide assurance that at least 70 per cent of the projected subscriber total was signed up and paid.

The committee again by majority vote asked REA to re-examine its requirement that competitive bids be obtained on central office equipment. Proponents of this change want this procedure to be made optional. A subcommittee appointed last October to study costs of engineering requested REA to advise applicants for loans to assign their own personnel, where practical, to work under supervision of the consulting engineer. The advisory group agreed with this recommendation. Its report emphasized that loan applicants and borrowers can economize by more careful scheduling of engineering and construction work.

Financial News and Comment

By OWEN ELY

Atomic Reactor Construction Costs Up Sharply

W. Kenneth Davis, AEC director of the division of reactor development, and his deputy, Louis H. Roddis, Jr., recently prepared a report for presentation at the Philadelphia conference on "Atomic Energy and Industry." This referred to overoptimistic estimates of several years ago that atomic energy would cost only about 4 or 5 mills (this writer has never seen any estimates much lower than 6 mills) and reached the conclusion that the reactor plants now planned for completion about 1960 show "no hope" of competing with modern fuel-burning plants.

Even the "first generation of true industrial nuclear power plants," coming in during 1960-64, will not be able to compete with "the most advanced conventionally fueled plants." After their initial shakedown, Messrs. Davis and Roddis estimate that these plants will be able to achieve costs in the range of 10 to 13 mills, as compared with fuel-burning costs ranging from 4½ to 9 mills (depending on the cost of coal delivered). Capital costs for these "first generation" nuclear plants are expected to range between $300 to $400 per kilowatt, compared with costs of $115 to $180 for coal-fired plants. (The figure of $115 seems very low.)

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The "second generation" of nuclear plants, going into service between 1965 and 1967, might approach a competitive level with coal-burning plants with respect to capital costs, the AEC officials think, but even in the year 1967—a decade away—operating costs would still be in a range of 9-11 mills. Only by 1980 do they expect costs to drop to 6 or 7 mills, making nuclear power competitive in most parts of the United States, except where fuel costs are exceptionally low.

By 1967, they expect nuclear power capacity to approximate 8 per cent of total additions to plant, but by 1980 some two-thirds of all new capacity should be nuclear. When 75 per cent is reached this may be considered a saturation point—with hydroelectric plants, very small units, or fuel-burning plants located where costs are extremely low, maintaining 25 per

cent of the annual increase in new capacity.

The dual-cycle boiling water reactor to be built by General Electric for Commonwealth Edison near Dresden, Illinois, has been considered in some quarters to be a most promising and efficient type of reactor. In an early press release General Electric published charts (reproduced at the time in this department) which indicated that with an 80 per cent load factor electricity could be produced at such a nuclear plant costing $250 per kilowatt (the estimated cost for the Commonwealth plant) at a kilowatt-hour cost around 7¾ mills, and with 100 per cent load factor at roughly 6½ mills.

In a letter to stockholders dated May 13, 1955, Chairman Willis Gale of Commonwealth Edison stated: "On this basis the plant will produce electricity at a kilowatt-hour cost approximately competitive with new coal-fired generating units in our service area." In May, 1956, Mr. Gale was still optimistic and told stockholders at the annual meeting that "by disregarding the $15 million of research contributions, we estimate that the plant will produce power at a cost, including fixed charges, operating expenses, and nuclear fuel, of about three-quarters of a cent per kilowatt-hour. This is about the same as the cost of power produced from our newest coal-fired plants. If the research and development cost were included, the estimated nuclear power cost would be about one cent per kilowatt-hour, or one-third higher than the cost of power from our conventional facilities."

In December, 1955, Leonard Reichle, nuclear engineering director for Ebasco Services, delivered an address before a conference of utility executives in which he presented the estimates shown in the accompanying table, "Estimated Energy Costs of Nuclear Power Plants." These kilowatt-hour cost estimates (excluding PWR at Shippingport) ranged from 9 to 15.7 mills.

In a more recent talk before the Executives Conference in December, 1956, Mr. Reichle summarized the progress made last year in nuclear power programs. After describing the various public and private projects, he stated that the AEC is now planning to spend about $315 million, the utility industry $330 million, and public power organizations $40 million, or a total of nearly $700 million for these projects. Some reactors will begin operation this year and practically all of them by 1960, unless there are further delays. (As noted in this department the Michigan plant has been delayed by labor union charges that the project is unsafe, and General Electric recently threatened to quit constructing the Illinois plant if Congress does not pass laws to help atomic industries with federal liability insurance, a bill for which is pending.)

The average fuel cost for conventional fuel-burning units in the United States is estimated to be around 2.2 mills, and for the best plant as low as 1.7 mills. On the other hand, fuel costs for nuclear power plants in 1960 were estimated at 3-4 mills by the McKinney panel in January, 1956, with an eventual decline to around 1 to 1.5 mills projected for 1980. While this would tend to indicate a slight competitive advantage for nuclear fuel by 1965 (particularly if coal prices rise further), this advantage would be more than outweighed by higher capital costs. Mr. Reichle estimates that if a nuclear plant costs $50 more per kilowatt than a comparable conventional plant, the added capital cost will approximate one mill per kilowatt. Eventually nuclear plants can probably be built and operated for almost

ESTIMATED ENERGY COSTS OF NUCLEAR POWER PLANTS

OPERATING CONDITIONS: 80% LOAD FACTOR (7000 HR / YR)
14% FIXED CHARGES

	PWR	CON EDISON	NPG (COMM. ED.)	APDA (DET. ED.)	CONSUMERS PUB. POW.	YANKEE ATOMIC ELEC. CO.
FIXED CHARGES (Capital Inv. x 14%) ÷ (7000 hr. x kw Rating)	6-15	4.4	5.0	9.0	6.4	5.0
FUEL COST (SNM Rental Charge + Fabrication + Cladding + Reprocessing + Inventory - Pu Credit - Value of Depleted U)	7-34	3.6	4.3	5.7	4.0	4.2
OPERATING LABOR & MAINTENANCE	1- 3	1.0	1.0	1.0	1.0	1.0
TOTAL ENERGY COST MILLS / KWH	14-52	9.0	10.3	15.7	11.4	10.2

EBASCO SERVICES INCORPORATED NEW YORK DECEMBER 1955

the same cost as coal plants, at which time the relative fuel costs will be the deciding factor.

UNFORTUNATELY, recent trends in capital costs for nuclear plants have been revised upward very sharply, according to the March, 1957, issue of *Nucleonics*. These increases appear due in part to greater safety precautions and in part to higher material and labor costs. Thus, because of radiation damage data developed by Babcock & Wilcox, they have designed a new core for Con Edison's Indian Point nuclear power station, and a spherical containment shell has also been adopted. This will raise capital costs to an estimated $255 per kilowatt (from $233), and the cost of generating power thus rises to 1.2 cents per kilowatt-hour compared with the earlier estimate of 9 mills.

Increases in capital costs of atomic power plants, based on recent testimony before the congressional Joint Committee on Atomic Energy, are reported by *Nucleonics* as shown in table on page 614.

Planning for reactors based on *atomic fission* received another potential setback recently. AEC Chairman Strauss reported that "encouraging progress is being made in research efforts to use *atomic fusion* (the hydrogen bomb principle) to develop power." The commission will start work this summer on a "Model C Stellarator" at Princeton University, an expensive tool designed to hold superhot gases together magnetically long enough for the fusion process to take place in a controlled

manner. While stating that certain discoveries have narrowed the approach to the major scientific problems involved, Mr. Strauss emphasized there has been no scientific breakthrough as yet which absolutely assures success.

The Bond Market's Amazing Reversal

THERE has seldom been such a quick right-about-face in the bond market as has occurred this year. In December four out of five new utility bond offerings were "slow" while in January all seven offerings of mortgage bonds were reported "well received." In February results were not quite so good but in March seven out of nine issues were again well received, with two making a poor showing. The $250 million American Telephone and Telegraph issue was quickly sold and a huge demand was indicated for the $125 million Aluminum Company of Canada debentures.

The average yield on Aaa bonds as compiled by Moody's Service has declined this year from 3.84 per cent to 3.70 per cent, the Aa from 3.88 per cent to 3.79 per cent, and A bonds from 4.06 to 4.02 per cent. More important, the spread between old and new issues has narrowed somewhat. In January eight new bond issues averaged a .65 higher yield than their corresponding Moody averages, while in March the same number of issues showed a premium of only 50 per cent, with a definite downward trend in the latter part of the month.

Why the Embargo on Forecasting Utility Earnings?

IT has become customary in recent years for the managements of many electric and other utility companies to forecast share earnings for a year ahead. Each company prepares a budget around the end of the year projecting a large number of variables, with the results combined into an estimate of share earnings. Since financing to provide construction funds plays an important rôle, the estimate usually makes certain assumptions as to the finance program.

It has been customary to release these figures at talks by top executives before the New York Society of Security Analysts (which has a membership of about 2,500) and similar societies in other cities, and less frequently at due diligence meetings in connection with security offerings. As indicated above, the estimates are not carelessly thrown out, but are almost invariably the result of an immense amount of statistical work by members of the company's staff. A typical utility budget for the year contained some twenty tables with accompanying text, all subaccounts of kilowatt-hour sales, revenues, expenses,

	Original Estimate (Mill.)	*Revised Estimate (Mill.)*	*Per Cent Increase*
Consolidated Edison (N. Y.)	$55	$70	9%*
Duquesne (Pa.)	37.5	55	47
Consumers Public Power Dist. (Neb.)	24.3	40-50	85
Yankee Atomic Electric (Mass.)	35	41.3**	18**
Commonwealth Edison (Ill.)	45	(?)	(?)
Rural Co-op. Power (Minn.)	6.4	8.4	31
Wolverine Electric (Mich.)	—	—	25

*Allowance is made for a 17 per cent increase in kilowatt capacity.
**As estimated by *Nucleonics*.

PUBLIC UTILITIES SECURITIES OFFERED FOR SUBSCRIPTION AND/OR SALE
(000 omitted)

	January 1 to March 31, 1957					January 1 to March 31, 1956				
	Total	Electric Companies	Gas Companies	Telephone Companies	Other Companies	Total	Electric Companies	Gas Companies	Telephone Companies	Other Companies
Long-Term Debt										
Offered Publicly	$ 860,045	$391,500	$102,500	$366,045	$ 4,000	$298,160	$142,000	$ 1,160	$115,000	$ -
Offered through Subscription	101,052	101,052	-	-	-	-	-	-	-	-
Offered Privately	85,260	16,200	56,900	12,160	-	61,815	-	27,615	27,000	7,200
Total	$1,046,357	$508,752	$159,400	$378,205	$ 4,000	$359,975	$142,000	$28,775	$142,000	$7,200
Preferred Stock										
Offered Publicly	$ 51,750	$ 24,000	$ 15,000	$ 10,750	$ 2,000	$114,377	$ 60,000	$40,000	$ 14,377	$ -
Offered through Subscription	47,522	1,639	45,483	400	-	5,066	-	5,066	-	-
Offered Privately	1,500	-	-	-	1,500	3,800	-	-	3,500	300
Total	$ 100,772	$ 25,639	$ 60,483	$ 11,150	$ 3,500	$123,243	$ 60,000	$45,066	$ 17,877	$ 300
Common Stock										
Offered Publicly	$ 61,799	$ 34,290	$ 21,718	$ 1,103	$ 4,688	$ 24,721	$ 21,384	$ 487	$ 2,850	$ -
Offered through Subscription	258,721	223,425	25,110	10,186	-	47,445	23,753	5,533	18,159	-
Total	$ 320,520	$257,715	$ 46,828	$ 11,289	$ 4,688	$ 72,166	$ 45,137	$ 6,020	$ 21,009	$ -
Total Financing	$1,467,649	$792,106	$266,711	$396,644	$12,188	$515,384	$247,137	$79,861	$180,886	$7,500
SEGREGATION OF FINANCING - BY PURPOSE										
Total Refunding	$ 49,750	$ 11,250	$ 38,500	$ -	$ -	$ 48,372	$ -	$13,995	$ 34,377	$ -
Total Investments	$ 27,371	$ 965	$ 21,718	$ -	$ 4,688	$ -	$ -	$ -	$ -	$ -
New Money										
Long-Term Debt	$ 996,607	$497,502	$120,900	$374,205	$ 4,000	$285,980	$142,000	$14,780	$122,000	$7,200
Preferred Stock	100,772	25,639	60,483	11,150	3,500	108,866	60,000	45,066	3,500	300
Common Stock	293,149	256,750	25,110	11,289	-	72,166	45,137	6,020	21,009	-
Total New Money	$1,390,528	$779,891	$206,493	$396,644	$ 7,500	$467,012	$247,137	$65,866	$146,509	$7,500
Total Financing	$1,467,649	$792,106	$266,711	$396,644	$12,188	$515,384	$247,137	$79,861	$180,886	$7,500
SEGREGATION OF FINANCING - BY TYPE										
Competitive Bidding	$ 825,550	$415,550	$ 50,000	$360,000	$ -	$291,275	$178,275	$ -	$115,000	$ -
Negotiated Sales	$ 148,044	$ 38,249	$ 89,218	$ 13,898	$10,688	$101,983	$ 45,109	$41,647	$ 17,227*	$ -
Subscription										
Competitive Bidding	$ 120,384	$ 96,289	$ 24,095	$ -	$ -	$ 16,394	$ 11,238	$ 5,066	$ -	$ -
Negotiated Sales	204,435	151,983	46,498	$ 5,954	-	27,131	12,515	5,533	$ 9,083	-
No Underwriting	82,476	77,844	-	4,632	-	9,076	-	-	9,076	-
Total Subscription	$ 407,295	$326,116	$ 70,593	$ 10,586	$ -	$ 52,511	$ 23,753	$10,599	$ 18,159	$ -
Private Sales	$ 86,760	$ 16,200	$ 56,900	$ 12,160	$ 1,500	$ 65,615	$ -	$27,615	$ 30,500	$7,500
Total Financing	$1,467,649	$792,106	$266,711	$396,644	$12,188	$515,384	$247,137	$79,861	$180,886	$7,500

* Includes $14,377,000 preferred stock not underwritten.

Ebasco Services Incorporated
Corporate Finance Department
April 5, 1957 - AVR

charges, etc., being projected for each month of the coming year.

Last year the writer obtained budget estimates of 1956 share earnings for 28 electric utility companies. The results have worked out as follows: Ten estimates were too high by an average of 3 per cent; but these included Niagara Mohawk whose earnings were affected by the unpredictable loss of its huge hydroelectric plant at Niagara Falls, and Middle South Utilities whose earnings were depressed by an unfavorable rate decision. Sixteen estimates were too low by an average of 6 per cent, and two estimates proved exactly right. These results seem to show that budget forecasts are more apt to err on the low side than on the high.

HOWEVER, present top officials of the SEC seem to take a dim view of these one-year forecasts despite the fact that their predecessors required some utility companies to furnish projections for three to five years ahead as a basis for the allocation of values to holding companies' securities. In two cases—Northern States Power and Niagara Mohawk—executives were criticized by the SEC for offering forecasts in connection with new security

MARCH UTILITY FINANCING

PRINCIPAL PUBLIC OFFERINGS OF ELECTRIC AND GAS UTILITY SECURITIES

Date	Amount	Bonds and Debentures	Price To Public	Underwriting Spread	Offering Yield	Aver. Yield For Similar Quality	Moody Rating	Success Of Offering
3/6	$16.0	Columbus & So. Ohio Elec. 1st 4¼s 1987	101.49	.90C	4.41%	4.06%	A	d
3/6	40.0	Texas East. Trans. 1st 4⅞s 1977* ...	99.50	1.13N	4.92	4.25	Baa	a
3/7	15.0	South. Counties Gas 1st 4⅝s 1982* ..	101.41	.95C	4.53	4.06	A	d
3/12	12.0	Minn. Power & Lt. 1st 4¼s 1987	102.75	.99C	4.58	4.06	A	a
3/13	50.0	Commonwealth Ed. 1st 4¼s 1987	100.00	.62C	4.25	3.72	Aaa	a
3/13	12.5	Pioneer Nat. Gas Deb. S. F. 5½s 1977*	100.25	1.25N	5.48	—	Ba	a
3/20	29.0	Appalachian Elec. Power 1st 4⅝s 1987	101.22	.64C	4.55	4.04	A	a
3/21	50.0	Pub. Serv. Elec. & Gas Deb. 4⅝s 1977*	101.37	.75C	4.52	4.04	A	a
3/29	6.0	New Orleans P. S. 1st 4½s 1987	100.82	.69C	4.45	4.02	A	a
		Preferred Stock				*Rights Basis*	*Per Cent Primary Subscrip.*	
3/6	15.5	Lone Star Gas Conv. 4.84%	100.00	2.40N	4.84	1-for-40	97%	—
3/19	15.0	El Paso Nat. Gas 5.68%*	100.00	3.00N	5.68	—	—	a
3/19	30.0	El Paso Nat. Gas $5 Conv.	100.00	—	5.00	1-for-56	—	—
		Common Stock—Offered to Public						
3/14	22.1	Central & South West	36.75	.95C	4.35	—	—	d
		Common Stock—Offered to Stockholders						
3/7	23.5	Consumers Power	42.75	.15C	5.61	1-for-15	95%	—
3/11	20.7	General Public Utilities	32.00	†	5.94	1-for-15	97	—
3/14	30.1	Southern Company	20.00	.09C	5.50	1-for-13	—	—
3/20	17.9	Baltimore Gas & Electric	31.00	.17N	5.81	1-for-11	—	—
3/20	1.7	Colorado Central Power	22.50	.73N	5.87	1-for-3⅓	—	—
3/20	2.9	Savannah E. & P.	18.00	N	5.55	1-for-6	—	—
3/20	1.0	Spokane Nat. Gas	7.50	—	—	1-for-3	—	—
3/21	2.7	Eastern Utilities Associates	30.50	.27C	7.21	1-for-12	—	—
3/26	28.6	Houston Lighting & Power	43.00	††	3.72	1-for-10	—	—
3/26	.8	Black Hills P. & L.	22.00	N	6.36	1-for-8	—	—

*Cash sinking fund. †Not underwritten, but allowance to soliciting dealers. ††Not underwritten. C—Competitive. N—Negotiated. a—Reported that the issue was well received. d—Reported that the issue sold slowly.

Source, Irving Trust Company.

offerings. The inference was that the forecasts had not been sufficiently "hedged," or explained, and did not suggest any real embargo on further forecasting. Nevertheless, utility company managements which in the past have been somewhat reluctant to forecast have now "clammed up" completely, and very few estimates are being given at due diligence meetings. At unofficial meetings such as the question and answer periods at the weekly analysts' meetings, some executives are still willing to present forecasts, with a humorous recital of all-inclusive hedge clauses, references to a clouded crystal ball, etc.

Utility stocks are not like industrial securities, where special factors frequently govern market appraisals. There are 135 electric utility companies, many of them so nearly alike in yields and PE-ratios that it is difficult for the utility analyst to differentiate between them. Yet many of them are competing against each other for the investor's dollars, and the utility analyst is expected to choose between them and advise his firm's customers as to which are the best buys.

WOULD it be possible for executives to give a *range* of potential earnings, explaining briefly just how the estimates were arrived at and what factors would influence the trend? Weather conditions play an increasingly important rôle in utility earnings: Gas utilities are affected by winter temperatures; electric utilities by the amount of air conditioning; companies with hydro plants suffer during droughts; and many utilities are at the mercy of sudden storms, floods, etc. The idea of a range of earnings would be principally to make allowance for the vagaries of the weather. When an important rate case is pending, earnings could be stated without the increase, and *"pro forma"* assuming it is granted in full.

DATA ON ELECTRIC UTILITY STOCKS

Annual Rev. (Mill.)			*4/4/57 Price About*	*Dividend Rate*	*Approx. Yield*	*Recent Share Earnings*	*% Increase*	*Aver. Incr. In Sh. Earns. 1951-56*	*Price-Earns. Ratio*	*Div. Payout*	*Approx. Common Stock Equity*
$268	S	American G. & E.	36	$1.44m	4.0%	$2.03De	5%	9%	17.7%	71%	34%
39	O	Arizona Pub. Serv.	24	1.12	4.7	1.74Oc	26	9	13.8	64	31
10	O	Arkansas Mo. Power	23	1.24c	5.4	2.00De	11	8	11.5	62	30
32	S	Atlantic City Elec.	28	1.30	4.6	1.66F	10	10	16.9	78	33
132	S	Baltimore G. & E.	34	1.80	5.3	2.32De	13	8	14.7	78	45
7	O	Bangor Hydro-Elec.	33	1.90	5.8	2.69De	22	8	14.7	71	35
5	O	Black Hills P. & L.	23	1.40	6.1	2.40Ja	10	1	9.5	58	27
99	S	Boston Edison	51	2.80	5.5	3.45De	1	2	14.8	81	50
21	A	Calif. Elec. Power	14	.76	5.4	.97De	7	16	14.4	78	36
21	O	Calif. Oreg. Power	34	1.60	4.7	2.30De	9	5	14.8	70	33
8	O	Calif. Pac. Util.	29	1.50	5.2	2.30De	6	6	12.6	65	25
63	S	Carolina P. & L.	24	1.20	5.0	1.67F	1	2	14.4	72	42
28	S	Cent. Hudson G. & E.	16	.80	5.0	1.10De	10	10	14.4	73	34
21	O	Cent. Ill. E. & G.	31	1.60	5.2	2.35De	14	11	13.2	68	33
35	S	Cent. Ill. Light	55	2.60	4.7	3.87F	D2	8	14.2	67	42
51	S	Cent. Ill. P. S.	30	1.60	5.3	2.29De	D5	12	13.1	70	38
13	O	Cent. Louisiana Elec.	34	1.60	4.7	2.06De	13	8	16.5	78	32
35	O	Cent. Maine Power	22	1.40	6.4	1.76F	2	4	12.5	80	34
128	S	Cent. & South West	37	1.60	4.3	2.32De	14	15	15.9	70	35
11	O	Cent. Vermont P. S.	17	1.00	5.9	1.19N	D9	2	14.3	84	28
114	S	Cincinnati G. & E.	28	1.20f	4.3	1.99De	5	7	14.0	60	43
6	O	Citizens Util. "B"	14	.90a	6.4a	1.11Se	2	11	12.6	81	40
111	S	Cleve. Elec. Illum.	39	1.60	4.1	2.60De	4	8	15.0	62	49
4	O	Colo. Cent. Power	23	1.20	5.2	1.84De	14	8	12.5	65	33
48	S	Columbus & S. O. E.	30	1.60	5.3	2.25De	3	5	13.3	71	36
360	S	Commonwealth Edison	40	2.00	5.0	2.72De	4	8	14.7	74	47
11	A	Community Pub. Serv.	26	1.20	4.6	1.82De	5	15	14.3	66	52

Annual Rev. (Mill.)		(Continued)	4/4/57 Price About	Dividend Rate	Approx. Yield	Recent Share Earnings	% Increase	Aver. Incr. In Sh. Earns. 1951-56	Price-Earns. Ratio	Div. Payout	Approx. Common Stock Equity
2	O	Concord Elec.	44	2.40	5.5	2.71**	3	2	16.2	89	61
71	O	Connecticut Lt. & Pr.	18	1.00	5.6	1.28F	12	7	14.1	78	39
23	O	Connecticut Power	41	2.25	5.5	2.75De	D2	4	14.9	82	41
522	S	Consol. Edison	45	2.40	5.3	3.20De	4	8	14.1	75	39
208	S	Consumers Power	46	2.40	5.2	3.33F	5	6	13.8	72	43
74	S	Dayton P. & L.	48	2.40	5.0	3.81De	13	8	12.8	63	38
39	S	Delaware P. & L.	46	1.80	3.9	2.50De	8	10	18.4	72	35
237	S	Detroit Edison	40	2.00	5.0	2.36De	D3	8	16.9	85	46
130	A	Duke Power	27	1.20	4.4	1.90De	5	20	14.2	63	52
95	S	Duquesne Light	37	2.00	5.4	2.44De	4	4	15.2	82	34
31	O	Eastern Util. Assoc.	33	2.20	6.7	2.58De	3	0	12.7	85	34
2	O	Edison Sault Elec.	16	.80	5.0	1.13Se	4	24	14.2	71	40
12	O	El Paso Elec.	24	1.00	4.2	1.38Ja	13	8	17.4	72	41
12	S	Empire Dist. Elec.	21	1.20	5.7	1.59De	9	3	13.2	75	31
4	O	Fitchburg G. & E.	50	3.00	6.0	3.52**	8	3	14.2	85	55
49	S	Florida Power Corp.	52	1.80	3.5	2.86De	24	19	18.2	63	32
110	S	Florida P. & L.	47	1.28	2.7	2.59De	26	25	18.1	49	38
189	S	General Pub. Util.	36	2.00	5.6	3.05De	9	12	11.8	66	40
6	O	Green Mt. Power	16	1.00	6.3	1.23De	—	7	13.0	81	36
56	S	Gulf States Util.	38	1.60	4.2	2.22Ja	3	17	17.1	72	31
22	A	Hartford E. L.	57	2.88	5.1	4.12De	D1	12	13.8	70	49
5	O	Haverhill Elec.	40	2.35	5.9	2.62**	34	—	15.3	82	100
21	O	Hawaiian Elec.	46	2.50g	5.4	3.45De	9	—	13.3	74	39
78	S	Houston L. & P.	51	1.60k	3.1	2.82F	9	20	18.1	57	46
8	O	Housatonic P. S.	22	1.50	6.8	1.41**	19	0	15.6	106	54
27	S	Idaho Power	35	1.40	4.0	2.18De	16	7	16.1	64	36
82	S	Illinois Power	59	3.00	5.1	4.00De	16	6	14.8	75	35
43	S	Indianapolis P. & L.	30	1.50	5.0	2.06De	10	5	14.4	73	39
20	S	Interstate Power	14	.80	5.7	1.00De	—	3	14.0	80	33
33	O	Iowa Elec. L. & P.	29	1.50	5.2	2.28F	6	10	12.7	66	31
39	S	Iowa-Ill. G. & E.	31	1.80	5.5	2.41De	4	3	12.9	75	41
37	S	Iowa Power & Light	28	1.60	5.7	2.03De	—	2	13.8	79	35
32	O	Iowa Pub. Serv.	16	.80	5.0	1.08F	D1	5	14.8	74	35
13	O	Iowa Southern Util.	22	1.28	5.8	1.85F	10	8	11.9	69	37
56	S	Kansas City P. & L.	39	2.00	5.1	2.76F	11	8	14.1	72	35
30	S	Kansas G. & E.	29	1.32	4.6	2.27F	13	12	12.8	58	29
45	S	Kansas Pr. & Lt.	26	1.30	5.0	2.01De	16	9	12.9	65	31
37	O	Kentucky Util.	26	1.28	4.9	2.13De	4	9	12.2	60	34
7	O	Lake Superior D. P.	24	1.20	5.0	1.69Se	13	4	14.2	71	38
6	O	Lawrence Electric	29	1.75	6.0	1.87**	34	D	15.5	94	62
98	S	Long Island Ltg.	23	1.20	5.2	1.51De	13	6	15.2	79	32
52	S	Louisville G. & E.	28	1.10	3.9	1.88De	4	4	14.9	59	40
7	O	Lowell Elec. Lt.	55	3.00	5.5	3.64**	19	D	15.1	82	59
9	O	Lynn G. & E.	32	1.60	5.0	2.10De	3	8	15.2	76	77
9	O	Madison G. & E.	46	1.80	4.0	3.82De	11	11	12.0	47	50
4	A	Maine Pub. Serv.	16	1.08	6.8	1.25Ja	8	3	12.8	86	33
5	O	Michigan G. & E.	45	1.60b	6.6b	4.07Se	16	13	11.1	39	35
159	S	Middle South Util.	33	1.60	4.8	2.23F	14	4	14.8	72	34
28	S	Minnesota P. & L.	27	1.40	5.2	2.10F	D1	6	12.9	67	36
2	O	Miss. Valley P. S.	30	1.40j	4.7	2.10Ja	16	3	14.3	67	31
12	A	Missouri Pub. Serv.	13	.72h	5.5	1.04F	12	20	12.5	69	29
6	O	Missouri Util.	25	1.36	5.4	1.79De	2	2	14.0	76	32
37	S	Montana Power	46	1.80	3.9	3.23De	7	5	14.2	56	36
130	S	New England Elec.	17	1.00	5.9	1.24Se	2	0	13.7	81	33
44	O	New England G. & E.	18	1.05	5.8	1.44F	—	5	12.5	73	42
45	O	New Orleans P. S.	46	2.25	4.9	2.65Ja	—	0	17.4	85	38
2	O	Newport Elec.	17	1.00	5.9	1.40Ja	16	4	12.1	71	30
83	S	N. Y. State E. & G.	38	2.00	5.3	3.02F	2	8	12.6	66	39
244	S	Niagara Mohawk Pr.	31	1.80	5.8	2.13De	D4	4	14.6	85	33
81	O	Northern Ind. P. S.	39	1.92	4.9	2.93De	7	7	13.3	66	34
118	S	Nor. States Power	17	.90	5.3	1.21De	4	9	14.0	74	33
9	O	Northwestern P. S.	17	1.00	5.9	1.38De	D2	3	12.3	72	26
129	S	Ohio Edison	51	2.64	5.2	3.79De	7	9	13.5	70	44
48	S	Oklahoma G. & E.	43	1.80	4.2	2.44F	2	9	17.6	74	35
15	O	Otter Tail Pr.	27	1.60	5.9	2.21F	1	7	12.2	72	38

Annual Rev. (Mill.)		(Continued)	4/4/57 Price About	Dividend Rate	Approx. Yield	Recent Share Earnings	% Increase	Aver. Incr. In Sh. Earns. 1951-56	Price-Earns. Ratio	Div. Payout	Approx. Common Stock Equity
471	S	Pacific G. & E.	49	2.40	4.9	3.37De	NC	13	14.5	71	35
48	O	Pacific P. & L.	32	1.60	5.0	2.10De	17	8	15.2	76	29
129	S	Penn Power & Lt.	44	2.40	5.5	3.29Ja	10	11	13.4	73	28
225	S	Phila. Elec.	40	2.00	5.0	2.59De	8	6	15.4	77	43
32	O	Portland Gen. Elec.	25	1.20	4.8	1.69N	2	6	14.8	71	39
64	S	Potomac Elec. Pr.	22	1.10	5.0	1.54De	8	8	14.3	71	39
83	S	Pub. Serv. of Colo.	44	1.80i	4.1	2.63De	7	8	16.7	68	39
300	S	Pub. Serv. E. & G.	32	1.80	5.6	2.10De	D7	—	15.2	86	38
75	S	Pub. Serv. of Ind.	39	2.00	5.1	2.60F	11	4	15.0	77	36
26	O	Pub. Serv. of N. H.	17	1.00	5.9	1.30Ja	7	13	13.1	77	36
11	O	Pub. Serv. of N. M.	15	.80	5.3	1.12Se	18	4	13.4	71	33
25	S	Puget Sound P. & L.	29	1.36	4.7	1.67De	10	10	17.4	81	61
58	S	Rochester G. & E.	28	1.60	5.7	2.24De	12	10	12.5	71	35
19	O	Rockland L. & P.	19	.80	4.2	1.05De	9	11	18.1	76	30
8	S	St. Joseph L. & P.	24	1.40	5.8	1.81De	7	7	13.3	77	40
51	S	San Diego G. & E.	21	.96	4.6	1.51De	23	6	13.9	64	40
8	O	Savannah E. P.	19	1.00	5.3	1.36Ja	17	4	14.0	74	30
9	O	Sierra Pacific Pr.	22	1.20	5.5	1.88De	33	14	11.7	64	27
195	S	So. Calif. Edison	49	2.40	4.9	3.48De	5	3	14.1	69	37
43	S	So. Carolina E. & G.	21	1.10	5.2	1.51De	12	20	13.9	73	36
6	O	Southern Colo. Pr.	15	.70	4.7	1.29N	6	11	11.6	54	37
228	S	Southern Co.	22	1.10	5.0	1.54De	14	10	14.3	71	35
16	S	So. Indiana G. & E.	31	1.60	5.2	2.03F	D5	5	15.3	79	35
7	O	So. Nevada Power	18	1.00	5.6	1.44De	5	15	12.5	69	34
1	O	Southern Utah Power	16	1.00	6.3	1.54De	60	D	10.4	65	38
3	O	Southwestern E. S.	20	1.16	5.8	1.64N	—	4	12.2	71	27
39	S	Southwestern P. S.	29	1.40	4.8	1.71F	13	4	17.0	73	30
26	A	Tampa Elec.	30	1.20	4.0	1.64F	17	14	18.3	73	38
146	S	Texas Utilities	43	1.44	3.3	2.40F	19	15	17.9	60	38
40	S	Toledo Edison	13¾	.70	5.2	1.01De	D8	5	13.4	69	29
12	O	Tucson G. E. L. & P.	32	1.40	4.4	2.02De	27	10	15.8	69	33
122	S	Union Elec. of Mo.	29	1.52	5.2	1.70De	—	11	17.1	89	36
33	O	United Illuminating	24	1.30	5.4	1.61De	—	7	14.9	81	48
5	O	Upper Peninsula Pr.	28	1.60	5.7	2.02Se	D8	14	13.9	79	36
41	S	Utah Power & Lt.	27	1.10	4.1	1.73F	8	9	15.6	64	43
118	S	Virginia E. & P.	46	1.80	3.9	2.78De	10	14	16.5	65	34
26	S	Wash. Water Power	36	1.88	5.2	2.31Ja	9	14	15.6	81	44
132	S	West Penn Elec.	27	1.50	5.6	2.15De	4	9	12.6	70	33
64	O	West Penn Power	50	2.40	4.8	3.27De	1	13	15.3	73	33
11	O	Western Lt. & Tel.	34	2.00	5.9	3.16De	17	10	10.8	63	33
26	O	Western Mass. Cos.	41	2.20	5.4	3.09De	—	10	13.3	71	56
105	S	Wisc. El. Pr. (Cons.)	32	1.60	5.0	2.44De	3	5	13.1	66	40
40	O	Wisconsin P. & L.	26	1.28	4.9	1.87De	9	4	13.9	68	36
37	S	Wisconsin P. S.	23	1.20	5.2	1.78De	2	6	12.9	67	36
		Averages			5.1%			9%	14.3	73%	
		Foreign Companies									
188	S	Amer. & Foreign Pr.	17	$ .80	4.7%	$2.19Se	27%	2%	7.8%	37%	46%
139	A	Brazilian Trac.	10	.75n	7.5	1.18**	D7	D	8.5	64	72
68	A	British Columbia Pr.	47	1.20	2.6	2.34De	14	27	20.1	51	30
17	A	Gatineau Power	30	1.40	4.7	2.28De	15	15	13.2	61	31
31	O	Mexican L. & P.	15	—	—	1.80**	27	117	8.3	—	45
13	A	Quebec Power	29	1.20	4.1	1.99De	15	14	14.6	60	52
54	A	Shawinigan Wtr. & Pr.	88	1.80	2.0	4.25De	22	26	20.7	42	40

A—American Stock Exchange. B—Boston Exchange. O—Over-counter or out-of-town exchange. S—New York Stock Exchange. Ja—January; F—February; Ma—March; Ap—April; My—May; Je—June; Jy—July; Au—August; Se—September; Oc—October; N—November; D—December. *Based on average number of shares. **Calendar year 1955. a—Estimated annual rate. The "A" stock received stock dividends. b—Also 3 per cent stock dividend December 31, 1956, which is included in the yield. c—Also 2 per cent stock dividend January 10, 1956. f—Also 5 per cent stock dividend August 15, 1956. g—Cash dividends of $2.50 in 1956 included 30 cents extra; 10 per cent stock dividend also paid April 30, 1956. h—Also stock dividend of one share for each 200 shares held September 12, 1956. i—Also 10 per cent stock dividend November 16, 1956. j—Also 10 per cent stock dividend August 31, 1956. k—Also 5 per cent stock dividend December 17, 1956. m—Also 2 per cent stock dividend January 10, 1956; 3-for-2 split June 15, 1956. n—Also 5 per cent stock dividend December 28, 1956.

What Others Think

A Taxpayer Looks at the Cumberland River Development

Most of you know that you (the federal government) have spent several billion dollars in the development of the Tennessee river valley through TVA. But how many have heard of the Cumberland river?

Well, over $400 million of federal funds have been, or are being, spent on this river and its tributaries. Certainly this expenditure has helped the people in this area and indirectly the nation through recreation, navigation, pollution abatement, conservation of water supply, flood control, and adding to TVA power. But $400 million is a great deal of money and here is a report on how the money is being spent:

The Cumberland river rises in eastern Kentucky near the Virginia border. It flows southwest through eastern Kentucky and into middle Tennessee. The word "meander" fits the river in this portion for its course is very tortuous as it cuts its way through the Cumberland mountains. At Nashville, it turns northwest again and re-enters Kentucky. In its lower portion it generally parallels the Tennessee river, just a few miles to the west. It runs into the Ohio river about 12 miles east of Paducah, Kentucky. Its total length is 693 miles and it drains an area of about 17,720 square miles.

Approximately 1,250,000 people live in its basin.

As early as 1830 efforts were made to improve navigation on the Cumberland river. In that year the state of Tennessee appropriated $60,000 for the improvement of those rivers lying west of the Cumberland mountains and east of the Tennessee river. This was probably spent on the removal of obstructions to navigation, as rock ledges, gravel and sand bars, boulders, snags, overhanging trees, and other surface obstructions.

Between 1904 and 1924, 15 permanent low navigation locks and dams were built on the Cumberland and by June 30, 1943, the cost of the original canalization project was $15,424,417 of which $9,622,653 was for new construction.

Of the 17,720 square miles in the Cumberland drainage area, about 12,500 were in farms in 1940. Of this about 7,300 square miles were available for crops and the rest wooded or otherwise unsuitable. Much of the farm land, especially in the lower valley, was subject to periodic floods and about every second year floods would be serious. The maximum area subject to floods, based on the highest flood of record, is estimated at 261,400 acres,

which is subdivided in 200,600 acres of cultivated land, 40,100 acres of woodland, and 20,700 acres of pasture. It is further estimated (all figures supplied by Corps of Engineers) that there are approximately 2,200 acres of improved urban property in the area.

In December, 1936, and January, 1937, there was the greatest Ohio river flood of record. Again the Cumberland was a major contributor. In 1940 the United States Corps of Engineers estimated that the average annual flood loss was a little more than $500,000 in the Cumberland river basin alone. This included crop loss, property loss, damages to bridges, roads, and railroads, and indirect losses to cities and towns.

In the Flood Control Act of June 28, 1938, the Ohio river basin plan for flood control and other purposes was included. The Cumberland river, Kentucky, and Tennessee was part of this and the stated purposes were "in the interest of navigation, flood control, and allied purposes, including pollution abatement, water-power production, conservation, and recreation." The Cumberland river basin plan originally included 11 reservoirs and of these six were approved for the immediate future.

Of the 11 projects, priority in the comprehensive plan was recommended as follows:

First priority: Completion of the Wolf Creek, Dale Hollow, Center Hill, and Stewarts Ferry projects for flood control and power.

Second priority: Construction of the Lower Cumberland dam for navigation and power, and the Cheatham dam for navigation only.

Third priority: Construction of Three Islands reservoir for flood control and power, and Rossview for flood control only.

Fourth priority: Construction of Old Hickory, Carthage, and Celina dams, primarily for power but with consideration to navigation and, finally, work on power projects in the extreme headwater region (Helenwood, Devils Jump, Laurel, and Rockcastle Narrows) should be deferred until the main development program is executed.

Construction started in 1941 at Wolf Creek and 1942 at Center Hill and Dale Hollow.

Wolf Creek dam was finished August, 1950, and all power units installed by August, 1952. Estimated cost was $61.3 million, actual cost $79,080,000; Dale Hollow power installations were completed November, 1953; estimated cost of whole project, $17.4 million, actual cost $25,961,000; Center Hill dam completed November, 1948, the power installations by April, 1951. Estimated cost $29.9 million, actual cost $44,330,000. Cheatham dam and lock were completed in 1954 and all power installations are to be in by September, 1958. Total cost will be about $30.3 million. Old Hickory dam is about complete at this writing and all power installations are supposed to be in about 1957. Estimated cost was $25.6 million. Actual cost will be at least $47.6 million. The Lower Cumberland dam, recently named the Barkley dam (after the late Vice President and Senator Alben W. Barkley of Kentucky), was authorized in 1954 and funds to start construction appropriated in the Congress of 1956.

The 1946 estimate of cost was $58 million. The estimate of 1954 was $167 million. The Corps of Engineers explains these differences between the original estimates and actual costs as being due to

fluctuation in construction costs. The *Engineering News Record* construction cost indices show a continually rising figure:

1936—170.2
1940—242.0
1946—346.0
1948—460.7
1950—509.6
1956—695.0

Besides this, many project plans are modified (nearly always by more expensive additions) and it all adds up to the taxpayers' consternation.

THUS of the 11 major projects approved, six are completed or under construction. Undoubtedly the other five will be undertaken within the next five or ten years, unless there is a complete reversal of the present federal policy.

Much of the power developed in the Cumberland river basin is distributed through TVA lines and there are 14 "tie-ins" with the TVA power grid. This power is counted as part of the whole TVA output, including dams of the TVA and its steam power plants. This is true, though the Corps of Engineers runs the generating plants and the lake reservoirs and keeps the dams and plants in good condition in the Cumberland river valley.

And that brings up the fact that a steam-generating power plant, costing $85 million is just now being completed at Gallatin, Tennessee, on the shore of the Old Hickory Lake reservoir and only a few miles from the Old Hickory dam. This was built and is operated by the TVA, even though on the lake shore and near a dam built and operated by the Corps of Engineers.

To summarize, the total expenditure (spent and authorized) for the development of the Cumberland river and its tributaries, exclusive of expenditures on local flood protection projects, is:

$ 60,000.00	First appropriation 1830
155,000.00	5 appropriations 1832-1838
606,000.00	13 appropriations 1871-1886
1,620,000.00	spent from 1886-1899
15,424,417.00	1899-June 30, 1943
$17,865,417.00	From 1830-1943 (exclusive of expenditures on multipurpose projects shown below)
Wolf Creek	$ 79,080,000.00
Dale Hollow	25,961,000.00
Center Hill	44,330,000.00
Cheatham Dam	30,300,000.00
Old Hickory	47,600,000.00
Lower Cumberland (Barkley) 1941-1956 Construction	167,000,000.00
	$394,271,000.00*
From 1830-1943	$ 17,865,417.00
1941-1956 Construction	394,271,000.00
Total	$412,136,417.00

* Total estimated cost of the currently authorized program together with previous projects is approximately $545 million exclusive of local protection projects. (Letter from Nashville District Engineer, dated September 4, 1956.)

This has been done under the supervision of the United States Army Corps of Engineers over a period of 126 years via many (and always larger) fund appropriations from Congress. Up to 1938 the object was navigational aid, primarily. After that, the plan was enlarged and changed to include flood control and power production, with recreation as an important by-product.

—O. REED HILL, M.D.

Power Energy Requirements to the Year 2000 A.D.

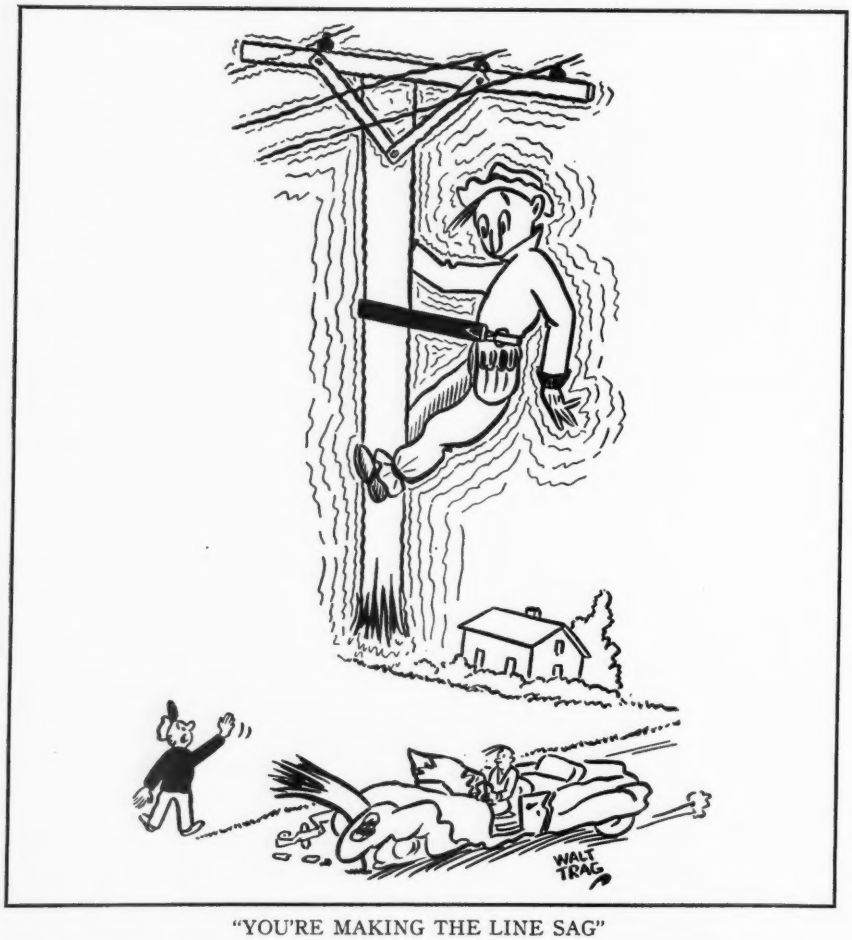
NUCLEAR energy will be a dominant factor in our power economy of 2000 A.D., according to Charles H. Weaver, vice president of Westinghouse Electric Corporation. In forecasting power developments in the remaining years of this century, Weaver predicted that before the end of the century, the supply of coal, oil and petroleum, and natural gas will be depleted to the point that they can no

longer furnish our energy needs. If that is true, nuclear power offers the only practical alternate to fossil fuels for meeting our energy requirements. Weaver's views were contained in a paper presented to a conference recently held at the Wharton School of Finance and Commerce at the University of Pennsylvania. Weaver said:

> In looking ahead forty-three years, let us pause momentarily and be sure we are oriented with respect to the past. In the space of 100 years from 1850 to 1950, this country's fuel energy economy was transformed from predominantly one of wood to one of coal, petroleum, and natural gas. Ninety per cent of the fuel used in the United States in 1850 was wood, while in 1950 coal, oil, and gas accounted for 98 per cent of the fuel consumption. We are all aware of the inventions and technological developments which accounted for and accompanied this transition—steam engines and turbines, gasoline and diesel engines, automobiles, airplanes, electronics, and so forth. For the purposes of our discussion today, we should establish the fact that our industrialization during the past century has seen major changes in our fuel sources within a span of fifty years. We went from a wood fuel economy to one of coal by the year 1900; by 1950, petroleum and natural gas provided over one-half of the fuel energy of the country. In other words, significant changes in our fuel sources have taken place in each of the two 50-year periods of history, and there is little doubt that another upheaval will take place by the year 2000.

THE speaker pointed out that it is even more startling to look at the sources of work output in this country during the last century. Fuels accounted for only about 12 per cent of the work output in 1850; work animals and human workers produced about 66 per cent, with wind and water furnishing the balance. By 1950, the picture was entirely changed. Fuels produced over 90 per cent of the work output of the country, with water power furnishing almost 8 per cent. And during that century, the work output of the United States increased 65 fold, while the population increased only six and one-half times. In other words, work output increased ten times as rapidly as did the population.

IN his discussion of energy needs and sources, Weaver leaned heavily on Palmer Putnam's book, entitled *"Energy in the Future."* Putnam's study, conducted for the Atomic Energy Commission, required some large energy unit, and he chose a common denominator for energy in terms of heat equivalent, Weaver explained. One billion billion British thermal units were designated as one energy unit. Some idea as to the size of this unit may be gained from his estimate that the current world consumption of energy is at the rate of two-tenths of one energy unit per year. Putnam estimates that the total world burn up of energy from the year one A.D. to the year 1860 was between six and nine units. During the next eighty-seven years between 1860 and 1947, the world used approximately four more units—or roughly half that burned in the preceding eighteen and one-half centuries. At the present rate, we are burning one unit every five years, which is five times the average rate over the last century, *and the rate is ever increasing.* It is estimated that the world will be consuming one energy unit annually by the year 2000, and this may increase to five to 10 units per year in 2050. This means that the last half of the twentieth century will re-



"YOU'RE MAKING THE LINE SAG"

quire 10 to 20 units of energy. Is it possible for the world to supply this much energy?

THE Putnam study for the Atomic Energy Commission estimates a coal reserve of 30 units. The U. S. Geological Survey estimates a reserve of 68 energy units. The Bureau of Mines estimate goes much lower—about eight energy units. This all adds up to a coal supply for power to 2000 A.D.

What about oil and gas? Putnam's study indicates that world oil and gas reserves can be estimated at six energy units, but only about four-tenths of a unit —about twenty years' supply—is economically recoverable.

What about water power? The total energy available from all the earth's rivers and streams has been theoretically set at eight units annually. The best estimates of practical potential from the water source is two-hundredths of a unit per year. All the best sites in the United States have been picked over. The remain-

ing potential is virtually all foreign.

There are several other energy sources about which there has been considerable speculation—sun, wind, tides, and the earth's heat. To date, no practical technique has been developed which allows these sources of tremendous amounts of energy to be tapped. The time may well come when these and other special sources of energy may prove to be of major consequence. But on the basis of our present knowledge and prospects Weaver indicated that all of these special sources would be able to supply "only six-tenths of one energy unit yearly."

THE conclusion to be drawn from these facts is inescapable: We are on the road to depletion of some sources. With others we are approaching a condition where rising costs will make their continued use uneconomical. Where, then, is our future energy to come from? There is no doubt, said Weaver, that the answer is found in the nucleus of the atom. Will there be enough of this kind of energy? Weaver believes the answer is an emphatic "yes." He explained:

> According to the most authoritative estimates, economically recoverable uranium reserves contain a theoretical potential of about 1,650 energy units. Added to this are about 70 units available from recoverable thorium reserves. The theoretical total, then, is more than 1,070 units. This figure must be reduced, however, to take account of process losses and conversions. Mr. Palmer Putnam, choosing to lean over backwards on the conservative side, reduces the theoretical total by about two-thirds.
>
> His revised estimate leaves the usable potential of atomic energy at about 575 units—over 25 times the net economically recoverable reserve of coal and over 100 times that of petroleum and natural gas. Such a potential is gigantic. It would service the world for a great many years and would provide time for developing still other sources of energy. Fortunately, the United States itself now appears to be in a favorable position in the production of uranium. At the 1957 hearings of the congressional Joint Committee on Atomic Energy, the Atomic Energy Commission reported that this country is the "leading uranium producer of the Free World and is currently furnishing approximately 50 per cent of its uranium supply." The report went on with this very significant statement, "The uranium supply is no longer a limiting factor in either the civilian or the military atomic energy programs."

Accepting the criterion that there is a tremendous potential of energy in uranium and thorium, it is appropriate to inquire into the uses which will be made of this energy. I can only surmise that the weapons program will make use of fissionable material for some time to come, but such applications should not interfere with the supply of fissionable materials for nonweapon uses. Also, I believe it is fairly obvious that the rate of developing the useful applications of atomic fission is dependent primarily upon the progress made in solving the technological problems. On this count, I am definitely optimistic. In reviewing the advances in technology during the past decade, I find two distinct impressions which stand out. The first is the seemingly never-ending parade of technical problems which must be solved in attempting to develop workable means of using nuclear energy. The second impression is, fortunately, the apparently inexhaustible capacity of American engineers and

scientists for solving these technical problems. Therefore, in stargazing four decades ahead, I do not belittle the magnitude of the technical job ahead, but confidently expect that the hurdles encountered along the way will be overcome.

In at least two fields, Weaver said, this is not stargazing. He pointed out that, as of today, it has been practically demonstrated that atomic power can produce substantial quantities of useful power. Perhaps the most dramatic application of nuclear power thus far is the plant which has driven the submarine *Nautilus* over 60,000 miles. The outstanding performance of the world's first nuclear vessel has paved the way for a nuclear Navy. Further, Weaver noted, nuclear power for tankers, cargo vessels, and passenger ships should not be far behind, for the technology evolving from the development of naval plants will certainly be applied to these other uses. "I think there is no question but that all large, long-haul ocean-going vessels will be nuclear-powered well before the year 2000," he said.

The second field is the use of nuclear fission to provide electricity in large quantities, Weaver continued. The first full-scale atomic power station for generating electricity at Shippingport, Pennsylvania, is well advanced and is scheduled for operation late this year. It will generate a minimum of 60,000 kilowatts of electricity which will be fed into the transmission lines of the Duquesne Light Company in the Pittsburgh area. Over one million kilowatts of electrical generating capacity have been announced thus far in projects for developing civilian atomic power in this country. These kilowatts should be available by 1962. It is likely that the installed nuclear electrical capacity of the United States will increase to between 50 to 70 million kilowatts by 1975. The British are operating a large electric-generating plant as a by-product of their Calder Hall plutonium plant, and the design or construction of other similar plants in England is under way.

"The question today is not whether or not electricity from nuclear fission is necessary or feasible," Weaver said. "The question being discussed most is—when will atomic power be economically competitive with other fuels? By the year 2000 this will have long since been answered. By that time I am sure that energy from the nucleus of the atom will provide far more electrical power than that derived from any other fuel."

Weaver cited other reasons for optimism about nuclear power assuming a commanding rôle in the period from 1980 to 2000. "First," he said, "we will know a lot more about reactors producing power from nuclear fission than we do today, and it would be surprising indeed if they were not much simpler to build and operate than they are now, or than they will be in 1965, for that matter. Secondly, we know the AEC is conducting a sizable research program to release the power of the nucleus in a completely different way, generally known as a controlled thermonuclear reaction."

Following a technical break-through, additional time will be required to translate the technology from the laboratory into operating power plants. Weaver would not make any prediction as to when controlled nuclear fission will be with us in fact, "but the year 2000 is too far away, and our ingenuity is too great for me to ever suggest that it is not possible in this century."

As for quantitative estimates by the year 2000, Weaver noted that few indus-

tries are as prudent as the electric utility industry in forecasting consumer needs in the years ahead. Their forecasts, however, give reliable estimates only up to the year 1980.

With today's installed capacity at about 120 million kilowatts, the expected increase by 1980 is between three and fivefold. What will the increase be by the year 2000? Weaver said a United Nations study postulates a possible four to sevenfold increase in world energy requirements in the next fifty years. He continued:

> Within this general climate of increased electrical power consumption in this country, it is appropriate that we consider some of the factors which tend to decrease power requirements. We are well aware that population, productivity, and power go hand in hand, and their advances are reflected in the rising need for electrical power in America. Between now and the end of the century the population of this country is expected to increase from 170 million to 325 million persons. This is based on an annual growth rate of 1.5 per cent per year, and is in good agreement with the estimates of the Bureau of the Census.
>
> There also are factors which will conserve energy, one of these being efficiency. The combustion efficiency of bituminous coal is estimated to have risen from 3 per cent in 1900 to 18.5 per cent in 1950. Other fuels are being used more efficiently. Electric central stations are getting seven times as many kilowatts of delivered energy out of a pound of coal today as they did in 1900. I am hopeful that by the year 2000 we will be able to obtain more output of electrical power per pound of nuclear fuel by supplementing the steam turbine with some means for converting nuclear energy to electricity without the use of a steam cycle.

Since the nuclear market is international in scope, the implications of foreign programs undoubtedly will have a significant bearing on domestic developments, Weaver pointed out. It is quite possible, he said, that the installation of nuclear generating capacity in foreign countries may initially proceed at a rate exceeding that in the United States, as evidenced by the Euratom objective. Obviously, he added, American industry stands to gain by its active participation in this foreign market, combining our know-how and resources with the need of other countries for new energy sources, with the result that valuable experience and technology gained thereby can be applied to our expanding domestic nuclear power program.

Although stressing the requirements for electrical energy, other significant new applications of nuclear power are to be expected, Weaver said. He noted that a substantial share of the government's reactor development program is now being devoted to aircraft nuclear propulsion. Furthermore, there are the challenges of applying nuclear power for propulsion through other media—the stratosphere and eventually outer space. It does not seem unreasonable, he said, to assume that nuclear-powered missiles will play a prominent rôle in our defense plans by the year 2000, and that much progress will have been made in developing manned nuclear aircraft.

In another field, nuclear process heating and space heating are virtually a certainty between now and the year 2000. Here again Weaver detects a double-barreled importance. Nuclear fuel will be called upon to assume much of the burden now carried by coal, petroleum, and nat-

ural gas. Perhaps, more importantly, nuclear energy will be needed to convert the increasingly precious coal to liquid and gaseous fuels for those applications requiring them.

—F. M.

Hell's Canyon Decision Brings Mixed Reaction

THE refusal of the U. S. Supreme Court (see ante, page 604) to review the decision of the Federal Power Commission to grant a license for private utility company construction of a dam at Hell's Canyon on the Snake river in Idaho has brought a variety of editorial comment from the nation's press.

These were some of the comments from representative newspapers throughout the nation:

The *New York Journal of Commerce*—"If the public power arguments had prevailed . . . the superior resources available to the central government would invariably tilt future decisions toward public as against private power projects. . . . There is a full-sized job to be done, hence it is gratifying to have the Supreme Court action on Hell's Canyon behind us. Consistent with the great traditions under which this nation has grown politically and economically . . . governmental activities should supplement rather than supplant private activities in the provision of needed services. The final action in the Hell's Canyon case is in full accord with this tradition."

The *St. Louis Post-Dispatch* — "The Supreme Court's refusal to review . . . places two responsibilities directly at the door of Congress. The first is to enact the bill offered by Senator Morse and twenty-seven colleagues for construction of a federal project. . . . The second is to amend the Federal Power Act so that further miscarriages of public interest by the FPC, like that at Hell's Canyon, will become impossible. . . . The chief deficiency of the Power Act is that it is not specific enough. It requires the FPC, when weighing the relative merits of public and private projects, to select the one that offers the most 'comprehensive' development of the resources. But it does not make clear what is meant by 'comprehensive'—an omission which opened the way for the FPC to license the Idaho Power Company to construct at Hell's Canyon a three-dam project which is very far indeed from being comprehensive."

THE (Portland) *Oregonian* — "If the Senate again votes against superseding the Federal Power Commission . . . that should end the matter. It is not fair to the Pacific Northwest nor to the private utility, which is investing millions in construction of Brownlee dam, to prolong the Hell's Canyon argument. . . . Let the federal dam bill be reported out and put to a final test without further delay."

The Washington (D. C.) Daily News—"The Supreme Court's action has the effect of saving the taxpayers, coast to coast, from a giveaway of $400 million or $500 million of their money merely to establish a government monopoly in an area a private utility could serve as well, or better, and more cheaply."

Newark Evening News—"The opinion won't be pleasing to the public power advocates but it makes sense."

The Hartford Courant—"It seems nonsensical to insist on spending tax money when private companies are willing and able to go ahead. But that's the way the public power lobby in Washington has tried to have it. . . . Meanwhile construction has been pushed and progress has been

considerable. The power will be on hand when it is needed because this administration refused to listen to those who think that only the state is equipped to build dams and provide power."

CONGRESSIONAL legislation is "virtually our last chance" for a Hell's Canyon high dam, C. Girard Davidson, the National Hells Canyon Association attorney, said after the highest court had denied review. Mr. Davidson added, however, that legal action was not ended. Robert Y. Thornton, Oregon attorney general, has appealed to the state supreme court the question of whether Idaho Power needs a permit from the Oregon Hydroelectric Commission. The company applied for a permit but did not get it. It then said it was not needed anyway and began construction.

In a statement issued in Boise, T. E. Roach, president of Idaho Power, called the high court's action "more a triumph for the orderly process of government than a victory for Idaho Power Company." He added: "It removes another of the many obstacles which the 'public-power-or-nothing' advocates have used in their efforts to discourage and prevent the Idaho Power Company from fulfilling its responsibilities to the people of this area."

Most puzzling reaction came from Clyde T. Ellis, general manager of the National Rural Electric Co-operative Association, however, who said "The battle for a federal Hell's Canyon dam is just warming up." In a telegram to other public power advocates, Ellis urged them not to be discouraged. He said: "Hell's Canyon yet will be built and the Supreme Court may yet reverse itself as usual."

Notes on Recent Publications

LAW OF ACCOUNTING. Lawyers, accountants, and corporate executives will find George S. Hills' study of the law of accounting and financial statements a valuable addition to their libraries. The author provides for the first time a detailed discussion of the legal sufficiency and judicial interpretation of all types of accounting presentations, supported by a most exhaustive marshaling of legal and accounting authorities.

The book covers all phases of financial accounting. In addition there are chapters on regulatory accounting and tax accounting, as well as discussions of specialized topics, such as bookkeeping entries, false financial statements, and cash and stock dividends. In the public utility field, the author demonstrates that regulatory accounting is not the same as common accounting. George S. Hills is a member of the law firm of Rogers, Hoge & Hills, of New York city. He has spent twenty years in preparing the material which this book encompasses.

THE LAW OF ACCOUNTING AND FINANCIAL STATEMENTS, by George S. Hills. Little, Brown & Company, Boston, Massachusetts, 1957. Price, $10. 338 pp.

REQUESTS for a report of the New England Governors' Committee on Public Transportation, mentioned in an article by Herbert Bratter appearing in the December 20, 1956, issue of this magazine, have exhausted the committee's supply. However, copies may be obtained by writing to the American Transit Association, 292 Madison avenue, New York 17, New York. The report is entitled "Local Public Transportation in New England," Report No. 3 to the New England Governors' Conference by the New England Governors' Committee on Public Transportation. It is concerned mainly with bus transit in average-size New England cities, although the basic recommendations are also reported applicable to larger metropolitan areas. The 36-page printed booklet incorporates a report made for the committee by Simpson and Curtin, a Philadelphia transportation engineering firm.

The March of Events

Project Nears Completion

THE U. S.-Canadian International Joint Commission recently reported that completion is expected in two or three months of a construction project to preserve the beauty of Niagara Falls and increase hydroelectric power production on both sides of the Niagara river.

The Niagara project was necessitated by the fact that the crest of the falls "has been eroding at an alarming rate for many years."

Alabama

Tax Relief Held Vital to Transit Company

THE Birmingham Transit Company must have "tax relief" to survive, according to C. C. Owen, president of the state public service commission. Commissioner Owen said the transit company, as well as all other transit companies over the nation, "are at the point of diminishing returns." Raising rates does not seem to be the answer to transit problems, he said. He said it appeared to him "that the additional revenue will have to come from tax relief." He intimated there were two choices:

1. For the city of Birmingham to discontinue its city taxes on the transit company, amounting to about $165,000 a year.

2. For the city to take over the transit company.

California

Plan to Base Power Rates on Costs Proposed

SOUTHERN CALIFORNIA EDISON COMPANY recently proposed to link its rates directly with rising production costs by means of an "escalator clause" pact with the state public utilities commission.

Under the plan, according to Robert P. O'Brien, Edison vice president in charge of rates, when costs went up rates would automatically follow in a manner comparable with labor contracts which connect wages to cost-of-living variations.

Commissioner Ray E. Untereiner said the new plan could not be considered at current hearings where Edison is seeking an annual rate increase totaling $34 million.

O'Brien pointed out that with rates geared to rise as costs of wages, fuel, taxes, and other production necessities rose, there would be no need for frequent applications to the commission for rate changes.

Objections to the proposal were filed

at once by the California Manufacturers Association and the cities of Azusa, Colton, Long Beach, Pasadena, and Riverside.

Gas Rate Raise Asked

AN application seeking authorization to increase wholesale gas rates was filed early this month by Pacific Lighting Gas Supply Company with the state public utilities commission.

The amount requested by the company is $2,217,000, which would increase net revenue by $1,020,000, after taxes. The increase, if granted, would affect the company's only two customers—Southern California Gas Company and Southern Counties Gas Company.

If an increase is not allowed, Pacific Lighting Gas Supply Company estimates that its rate of return will fall to 4.58 per cent during 1958.

Maryland

Transit Director Appointed

MAYOR D'Alesandro of Baltimore recently announced the appointment of Henry A. Barnes to be city transit director in charge of co-ordinating attempts to improve Baltimore's mass transportation system.

Going on television to give his side of the transit dispute, the mayor also disclosed he would make another effort to give Baltimoreans "the right to vote for or against public ownership of transit facilities." His package plan for a referendum on the question of public ownership failed in the state legislature early this month.

Nebraska

Chamber in Favor of Donation Bill

THE board of directors of the Lincoln chamber of commerce favors a legislative bill (LB 362) dealing with contributions to charities and support of nonprofit civic organizations by publicly owned utilities.

The bill would affect Nebraska's public power districts, which have in the past encountered legal difficulties in contributing to Community Chest drives and other charities.

The general manager of the Lincoln chamber said the directors favor both elements in the bill, but feel that each aspect should be handled as a special bill, because of the distinction between contributions to charity and financial support of organizations which in turn directly benefit the utility.

He said that utilities, like the power districts, have been advised by their attorneys that it is legal for the utilities to give support to chambers of commerce.

Bill Requiring Utility Service to Cities OK'd

A BILL requiring utilities to furnish wholesale service to a city after the city has taken over the utility's local retail distribution system by condemnation was approved by the state legislature's public works committee recently.

The measure, LB 150, is the result of a dispute between the city of Bayard and the North Central Gas Company. Bayard seeks to acquire North Central's distribution system with North Central continuing to furnish gas to the city at wholesale. Litigation growing out of the case was pending in the state supreme court.

Pennsylvania

Gas Bill Raise Blocked

THE state public utility commission last month blocked for six months an estimated $6,473,720-a-year natural gas rate increase asked by the Manufacturers Light & Heat Company, Pittsburgh, for its 246,500 consumers in 25 counties. At the same time the commission ordered an investigation to determine whether the raise is justified.

The company filed the increase early in March to go in effect in two parts, $1,518,115 on May 12th and $4,955,605 on May 13th.

The first is designed, the company said, to recover only the increased cost of gas which it buys. It would cover higher charges it is now paying or will pay as a result of proposed increases filed by five major suppliers with the Federal Power Commission, it added. The second is intended to offset higher costs of labor, pipelines, and materials, allow a "reasonable return to maintain its financial stability," Manufacturers told the commission.

Curb on Auto Pools Urged

A CANONSBURG bus operator wants the state public utility commission to regulate neighborhood car pools. The bus line operator, testifying before the Governor's Committee on Mass Urban Transportation, contends auto combines developed in the war years to save gasoline and tires now constitute "unfair competition" for other carriers.

He charged car pools had robbed bus lines of passengers but are required to prove no responsibility whatever.

Vermont

Senate Defeats Line Proposal

THE state senate late last month defeated a bill which would have provided for state construction, ownership, and operation of transmission facilities for power from the St. Lawrence hydroelectric project.

Vermont will receive 100,000 kilowatts of St. Lawrence power. Cost of construction of the transmission system has been estimated at between $10 million and $15 million, depending on what existing facilities are used.

The rejected bill had been opposed by Governor Johnson, the state public service commission, the Associated Industries of Vermont, and private utilities. It was advocated by co-operative and municipal systems and by organized labor.

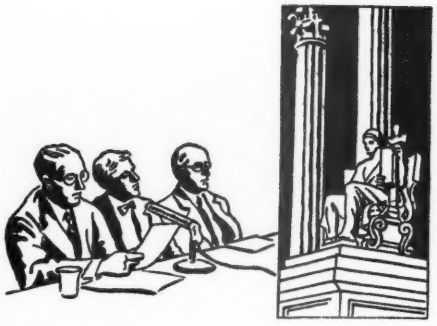
Washington

Power Commission Abolished

GOVERNOR Rosellini recently signed into Washington state law a bill abolishing the state power commission and transferring its powers to joint operating agencies.

The governor also approved a companion measure, listed as SB 281, which creates a division of power resources under the state department of conservation and development to take over records of the state power commission and make studies of the feasibility of a steam power-generating plant.

The bill abolishing the power commission, listed as Substitute SB 280, authorizes two or more cities or public utility districts to join to form joint operating agencies. Such agencies were given authority to acquire coal-bearing lands. Coal in the Roslyn-Cle Elum area has been proposed as a source of fuel for a steam plant.



Progress of Regulation

Trends and Topics

Communications Services Subject to Regulation

RECENT decisions by the California commission and the Missouri commission present this interesting question: What are common carrier communications services subject to commission regulation? The California decision (17 PUR3d 200) reviewed in PUBLIC UTILITIES FORTNIGHTLY, March 28, 1957, at page 491, was a determination that the commission has jurisdiction over the leasing and maintenance of mobile telephone equipment supplied by a regulated telephone company, and over rates for such service. The Missouri decision, in Re Southwestern Bell Teleph. Co. Case No. 13,525, March 25, 1957, determined that loud-speaker paging service supplied by the company is a public utility service subject to regulation by the commission, for which rates may be filed by the telephone company.

Facilities Supplementing Telephonic Communication

Various types of service differing from ordinary telephone service may be involved in controversies over the scope of regulation. The California commission noted that Pacific Telephone & Telegraph Company furnishes service "analogous to private mobile radio service," including private leased line service, local private lines, telemetering service, code-calling equipment, loud-speaker paging equipment, and buzzer equipment. The loud-speaker paging service involved in the Missouri case is used by hospitals, department stores, hotels, large manufacturing plants, bus terminals, and the like. Its primary purpose is for summoning persons to the telephone. The company does not sell or lease the equipment used in this service to its patrons. Loud-speaker paging equipment is separated into two classifications, "in switchboards" and "not in switchboards," meaning a physical connection or not of such paging facilities with the telephone switchboard which carries usual telephonic communications.

Those protesting against the classification of this service as a public utility telephone service included persons not offering a paging service as such but

selling or leasing to their customers all manner and kinds of equipment for such paging uses. That is their business. At times Bell buys equipment from them. They contended that Bell's paging service is a private communication system rather than a part of its "common carrier communication service," whether the equipment used therefor is or is not attached to the switchboard "and most certainly when not so attached." They argued that this equipment being used entirely independent of the telephone system, with no connection with communications circuits, makes the paging system purely a private communication service.

On the other hand, Bell argued that the dominant purpose of its paging service is to summon persons to the telephone, which thereby makes the paging service a part of its "common carrier communication service." When one person seeks to use the telephone as a means of communicating with another, he normally would reach the person sought. Otherwise there could be no communication between them by that effort. If such person called is not presently at his telephone and by means of this paging service is summoned thereto, the paging service, said the commission, is certainly used to facilitate telephonic communication and to play its part therein.

Question of Unlawful Competition

Aside from the question of public utility status of these supplemental services supplied by telephone companies, there is involved the question of unfair competition and a decree by a federal court enjoining companies in the American Telephone and Telegraph Company system from engaging in any business other than the furnishing of common carrier communication. Those opposing the company's activities urged that these supplemental services by a large telephone company are unfairly competitive with small private business concerns offering similar service.

Both the California commission and the Missouri commission disagreed with this contention. The California commission noted that there was no proof as to the company's intent to avoid the consent decree of the federal court, and, moreover, in any event it was for the federal courts and not for the commission to implement their decisions. The Missouri commission, after discussing the wording of the injunctive decree, concluded that the company when operating its paging service is not violating the injunction.

This decree enjoins Bell from "engaging in any business other than the furnishing of common carrier communications service." Common carrier communications services, according to the court, include "any communications service or facility, the charges for which are subject to regulation under existing laws of any state." Obviously, said the commission, the paging service is a "communication service or facility." It is used primarily to summon persons to the telephone and is a facility which contributes to and plays a part in telephonic communication whether its transmitting equipment is attached to the switchboard or not.

Both the California commission and the Missouri commission concluded that under the laws of those states the supplemental services supplied by the tele-

phone company are subject to regulation and therefore, in harmony with the court's decree, these services may be supplied under state commission regulation. The California commission found that competition of regulated companies with the nonregulated, if it is unfair at all, is more likely to be unfair to the regulated than to the nonregulated competitors. The telephone company is required to make charges which are fully compensatory. It is under the disadvantage of being unable to enter into price competition with its competitors to secure the business of particularly desirable customers. It is required to serve customers its competitors may not elect to serve.

Review of Current Cases

Gas Rate Increase Granted with Rate of Return Based on Capital Cost

AFTER an investigation on its own motion, the Pennsylvania commission authorized the Peoples Natural Gas Company to increase rates sufficiently to produce allowable revenues of $55,612,000, an increase of $1,288,000. The rate of return on a fair value rate base of $97 million was calculated to be 6.4 per cent. Increased costs for purchased gas, wages, materials and supplies, and taxes were cited by the company as necessitating the rate increase. Substantial additions to plant were also noted.

The commission approved a proposed minimum monthly charge for industrial customers using in excess of 500 Mcf of gas per month. This minimum was based on 15 per cent of the greatest monthly bill for any of the immediately preceding billing months of December, January, February, or March. For industrial customers using less than 500 Mcf of gas per month, the commission prescribed a minimum charge of $5. First block charges of $1.75 and $2.75 were authorized for nonheating and space-heating customers, respectively.

Trended Original Cost

The company submitted a valuation based on original cost along with valuations based on trended original cost at the average price levels of 1955, 1953-55, and 1951-1955. Generally, trended original cost at the average prices of 1955 was determined by applying trending factors to the original cost by years of installation. The relationship of 3-year (1953-55) and 5-year (1951-55) average index numbers to corresponding 1955 index numbers was then determined to derive 3-year and 5-year average trending factors. The commission found the results of the process generally acceptable.

Return and Cost of Capital

Under Pennsylvania law the commission is required to give consideration, among other things, to original cost and to reproduction cost (or trended original cost). A rate of return of 7 per cent was claimed on the basis of cost of capital alleged to range from 6.88 per cent to 7.38 per cent. Since Peoples Natural Gas is a wholly owned subsidiary of Consolidated Natural Gas Company and obtains all its capital from the latter, the claimed rate of return was based on the cost of capital to Consolidated.

The actual capital structure of Consolidated at the end of 1955 consisted of approximately 30 per cent long-term debt and 70 per cent common equity. Besides computing cost of capital on this capital structure, Peoples also submitted a composite cost of capital on a capitalization of 50 per cent debt and 50 per cent equity, the latter being offered as more typical of the natural gas distribution industry. The average capital structure of a group of 12 fairly comparable natural gas distribution companies for the period 1951-55 was 53 per cent debt capital, 7 per cent preferred stock, and 40 per cent common equity.

The historical cost of Consolidated's debt capital was 3.05 per cent, which is below the current cost of new debt money. In determining the cost of common equity capital, Peoples gave special significance and weight to earnings-book value ratios.

While earnings-book value ratios indicate the rate of return actually earned on common equity capital originally invested or accumulated in the enterprise, the commission said, they are not a measure of the return required by investors under present conditions. They therefore do not represent evidence of the cost to attract common equity capital currently. On the other hand, the use of representative earnings-price ratios in finding a fair rate of return allows a return on the equity portion of fair value at the current rate for equity capital actually required by investors, the commission asserted. Furthermore, current earnings-price ratios recognize growth in retained earnings.

It was noted that Consolidated's common stock traded in the market at an average earnings-price ratio of 8.43 per cent and at a yield of 4.38 per cent during the period 1951-55. These ratios were related to the 65-70 per cent common equity proportions in Consolidated's capitalization and to its average dividend pay-out of 53 per cent. The average earnings-price ratio of a selective group of 12 natural gas common stocks for the same period was 7.80 per cent, and the average yield was 5.40 per cent. The average dividend pay-out of the group was 72 per cent and the average common equity ratio was 40 per cent.

A comparison of these ratios indicates a high credit standing of Consolidated with investors.

In claiming a 7 per cent return, Peoples gave special significance to financial and other economic statistics, the relative price level, and the state of the national economy.

Investors, the commission noted, are aware of the economic climate in general, and they reflect this knowledge in the price they pay for securities. Therefore the capital market statistics on which the cost of capital is based reflect all of these economic considerations. Peoples' special claim on this ground was held to be unjustified.

The commission determined that a fair rate of return for Peoples could be determined reasonably on the basis of a capital structure of 40-50 per cent debt and 50-60 per cent common equity. Considering all the evidence, a fair rate of return was fixed at 6.40 per cent.

Election Not to Take Accelerated Depreciation

Peoples' claim for income taxes was based on straight-line depreciation since it elected not to take accelerated depreciation. The city of Pittsburgh raised the question whether the commission may allow as an operating expense only the tax which would be payable if the utility had availed itself of accelerated depreciation.

The commission noted that allowance of taxes actually paid was well established

in Pennsylvania. The commission may not substitute its judgment for that of the utility unless there has been an abuse of managerial discretion. The exercise of the option to take or not to take accelerated depreciation cannot be considered an abuse of discretion.

The commission warned, however, that if a company, after securing rates based on straight-line depreciation, suddenly decides to take accelerated depreciation, excessive earnings would be open to investigation. The utility should be on notice, it was observed, that minimization of taxes by way of accelerated depreciation constitutes a tax saving, not a tax deferral, which must inure to the benefit of the consumer.

Working Capital

The claimed amount for materials and supplies was allowed. But since the requirement for cash working capital and minimum cash bank balance were more than offset by accrued taxes, these items were disallowed. *Pennsylvania Pub. Utility Commission et al. v. Peoples Nat. Gas Co. C. 16591, C. 16592, C. 16594, February 26, 1957.*

At the same time the Peoples decision was handed down, another rate case involving Pennsylvania Gas Company was decided. It contains issues and rulings similar to those presented in the instant proceeding. *Pennsylvania Pub. Utility Commission v. Pennsylvania Gas Co. C. 16606, February 26, 1957.*

End Result More Important Than Return

THE Louisiana commission adhered to the view that the end result was more important in determining the rates of a small telephone company than finding a rate of return on the rate base. In approving an application for a rate increase, as modified, the commission commented that it would be derelict in its duty if it arbitrarily chose an over-all return of 6 per cent for a utility that borrowed 90 per cent of its capital at an interest rate of only 2 per cent, thus allowing a return of about 42 per cent on equity capital.

Citing the Hope Natural Gas case (1944) 320 US 591, 51 PUR NS 193, the commission stated that its rate-making function ended when it set rates that produced a reasonable end result. The earning requirements that would produce such a reasonable end result had first to be determined. Then, if anyone wished to find out what the percentage rate of return was, either out of academic interest or even idle curiosity, that end result in dollars could be divided by the rate base and such a percentage figure could be arithmetically arrived at. The percentage, in the commission's opinion, would have little or no relevancy to the basic problem—to provide sufficient earnings to pay interest on outstanding debts plus a reasonable return on equity capital, regardless of what particular percentage that figure might represent.

Debt Amortization in Return

Representatives of independent telephone companies had advanced the theory that the rates fixed should provide not only the interest on debt and a return to the equity holders, but sufficient funds to amortize the debt. The commission held such a theory definitely unsound.

An exhaustive search turned up only one case where a utility had attempted to establish rates that would provide interest and amortization of debt. In Wisconsin

Southern Gas Co. (1953) 100 PUR NS 71, the commission had held that it was not the function of the rate of return to provide cash for debt amortization, since this would require consumers to share in the capital cost of the enterprise without participating in the earnings and would violate the fundamental concepts of regulation. On the other hand, said the commission, many cases have held that cost of money is a reasonable test of a rate of return. *Ex Parte LaSalle Teleph. Co., Inc. Order No. 7083, No. 7094, December 14, 1956.*

Telephone Rates Raised on Showing of Increased Costs

On a showing of increased wage and maintenance costs, along with a net loss in 1956, a small telephone company was authorized by the Missouri commission to file increased exchange rates. A rate of return of 6.5 per cent was allowed as reasonable on an estimated net rate base developed by the Missouri commission staff.

The staff obtained an amount for telephone plant and equipment from the company's federal income tax reports dating back to 1951, in lieu of any value shown on the company's books. Additions and depreciation to date were calculated and applied, resulting, with the addition of working capital, in an estimated rate base. The company was directed henceforth to maintain its books and records in accordance with the Uniform System of Accounts for small telephone companies.

Asking a rate increase which the commission ascertained would provide a rate of return of about 15 per cent, the company urged that such revenues were required to finance much needed plant and equipment improvements. The commission pointed out, however, that it is the responsibility of the utility to provide capital for additions to plant and equipment, not the subscribers' obligation. After the company has made the capital investment, said the commission, it will then be entitled to earn a fair return on such investment. *Re Worth Mut. Teleph. Co. Case No. 13,526, March 5, 1957.*

Telephone Company Ordered to Extend Service Despite Presence of Co-operative

A telephone company contended, when prospective customers applied for an order requiring extension of service in a certain area, that a co-operative which had filed a service area map covering the territory, annual reports, and rate schedules was the organization that should be directed to serve the territory. The Missouri commission did not agree, pointing out that no jurisdiction over the co-operative existed except with respect to property within a certain city which the co-operative had dedicated, and was using, to furnish telephonic communication, for hire, to the public.

The filing of annual reports, tariff rate schedules, and a service area map was consistent with the co-operative's duty to report public utility operations in that city, said the commission. Matters in the filings which related to operations in rural areas, not under the commission's jurisdiction, were regarded as surplusage. Making such filings was held no indication of any pro-

fession of service or dedication of other property to public use as against clear and convincing testimony to the contrary.

Confiscation Plea Not Valid

A further contention was that the company could not, within constitutional limits, be required to serve beyond the area which it professed to serve and at a financial sacrifice. The commission held that such contention overlooks the protection afforded the company of earning a fair return on added investment in facilities and in the operation of extension rules on file. Such protection should alleviate, if not prevent, confiscation. A plea of confiscation, said the commission, is lodged with more propriety in a case where there is a lack of a rate structure sufficient to support a profitable operation than in a case where the inadequacy of extension rules in serving new customers would result in confiscation.

Competition with Co-operative

The company also argued that an order requiring service would compel it, against its will, to engage in competition with the co-operative. Moving the boundary line would provoke other requests to do so until finally all of the co-operative's territory would be served by the company. The commission agreed, recalling the testimony of a witness to the effect that at least 80 per cent of the co-operative's customers would take the company's services.

The company, however, was in a good position to extend existing facilities to reach the complainants, and others, in this territory because it had an 11-pair cable line within three miles, capable of serving a number of customers. The case had to be decided, not on whether the company was reluctant to enter the territory of another, but on the basis of public need.

Public Need

The commission concluded that public interest supported the extension of service. If complainant's request was denied, regulated public utility service, for hire, could not be obtained because no other public utility was serving in, or even near, the area. The only semblance of service which could be obtained was from the co-operative, provided the customers built and maintained their own lines to a city three to four miles away.

The co-operative's service was poor and wholly inadequate for modern-day needs. Although the co-operative's management had tried to have lines kept in good order, improvements depended upon whether or not patrons would rehabilitate their lines and keep them in good working order. The commission ordered a change in the service area map to include the territory in question. *Holder et al. v. Southwestern Bell Teleph. Co. Case No. 13,530, March 13, 1957.*

Southern Bell Wins Injunction on Confiscation Issue On Evidence of Actual Operations under Rate Order

SOUTHERN BELL TELEPHONE & TELEGRAPH COMPANY has won a decision from the Tennessee chancery court declaring a rate order of the Tennessee commission confiscatory and unconstitutional and enjoining the commission from interfering with the company's placing into effect the rates which it originally filed.

In the initial proceedings before the commission (12 PUR3d 170), the com-

pany asked for rates based on a fair value rate base. This was denied. The commission adopted a net investment rate base and allowed rates which it determined would produce a rate of return of 6.1 per cent.

On review (14 PUR3d 278), the chancery court held that a present fair value rate base was not required under Tennessee law, that the commission was bound only to determine rates that were "just and reasonable." Injunctive relief was denied. Next, the company complained that the prescribed rates were confiscatory and unconstitutional even under the commission's own formula and again sought injunctive relief. This time Southern Bell won, though the court reaffirmed its earlier holding on the present fair value question.

Admissibility of Operating Data

On the question of confiscation the commission was directed on remand to take and certify to the court evidence of the company's actual operating experience under the rate order, covering a period of four months. The commission argued that consideration of the operating experience under the order was beyond the scope of review by the court. The introduction of such evidence, it was said, amounted to the institution of a new rate case, contrary to the governing statutes.

The court, however, found nothing in the statutes to indicate a legislative intent to exclude such evidence from judicial consideration in rate cases. Doubt was expressed that such evidence could be excluded where the utility comes into equity for protection against confiscation. It is not only within the power of the court, but is its duty, said the court, to receive and consider evidence of the company's actual operating experience under the rate order to test its constitutionality.

Deficiency in Allowed Return

On this evidence, which was not controverted, the company relied most strongly to establish its contention that the order was confiscatory. This operating evidence showed that the company's actual rate of return on its net average investment was only 4.01 per cent, 2.09 per cent less than the 6.10 per cent allowed by the commission. The deficiency was the result, it was said, of the commission's failure in its order of January 26, 1956, to give effect to a 1955 wage increase, additions to plant prior to the order, a 1955 increase in taxes, and a 1955 increase in depreciation expense.

That the company was not earning the allowed rate of return on the rate base, the court indicated, would not compel a determination that the rate order was confiscatory. What had to be determined was whether the actual, realized rate of return was just under the proven circumstances.

Cost of Equity Capital

A satisfactory approach to the problem, said the court, is to examine the return being realized upon equity capital and compare such return with the company's competitive cost of capital. The return on equity capital is a basic constitutional test of confiscation. The cost of capital to the company becomes a factor in rate making when it is shown that in order for the utility to perform its obligations to the public it is necessary for it to attract additional capital. The commission, in its order, recognized the company's need to raise additional capital.

It was shown in the new evidence that, assuming the 45 per cent debt ratio imposed by the commission, the return being realized by the company on equity capital was only 5.14 per cent. The minimum return on equity capital found necessary by the commission, however, was 7.60 per

cent, a difference of 2.46 per cent, or nearly $4 million in gross revenue. Calculating the return on equity capital on the basis of the company's actual debt ratio, the deficiency increased to 3.58 per cent, or more than $8 million in gross revenue. Therefore, the court observed, accepting the commission's finding as to minimum required return on equity capital, the uncontradicted proof showed that the rates prescribed did not produce the required return, but substantially less.

The court concluded that the rate order did not allow a "just and reasonable" rate of return and was thus confiscatory and unconstitutional. Examining the total effect of the rate order, the court found it confiscatory "because it does not allow a sufficient return to the complainant to enable it to attract and obtain necessary additional capital which is needed by it to perform the service required of it by the rate order itself."

Injunctive Relief Chosen

The questions of admissibility of evidence and confiscation disposed of, the court turned to the relief to be granted. The rate order being invalid, the cause could either be remanded to the commission for the fixing of reasonable rates or the commission could be enjoined from interfering with the company's placing into effect the original rates which it filed at the institution of the proceedings before the commission. The court chose the latter course in view of its experience with the commission's unwilling action on the remand of the case for the taking of the additional evidence.

Until the commission's statutory power to fix rates is validly exercised, the court observed, the utility has a common-law right to fix its own rates. The rates filed by it at the commencement of this proceeding were the rates which it had a right to collect.

Nor is the granting of the injunctive relief judicial rate making, the court declared. *Southern Bell Teleph. & Teleg. Co. v. Tennessee Pub. Service Commission et al. No. 77381, February 21, 1957.*

Electric Company Has Power to Appropriate Land For Ash Disposal

A PENNSYLVANIA equity court decided that an electric company had power to appropriate land by eminent domain for the disposal of ashes produced in its steam-generating plant. Under a Pennsylvania statute electric companies are given power "To appropriate property . . . necessary for its corporate use in . . . operation or maintenance of its . . . plants, works, equipment, and facilities for generating electric light, heat, and power . . ." The statute further provides for preliminary approval by the commission before a company may exercise such power.

A landowner sought, in this case, to enjoin the commission from entertaining an application by the company for permission to acquire his land for ash disposal purposes. It was urged that storage of ashes resulting from the operation of a steam-generating plant is not necessary as an integral part of the electric power-generating activity. Moreover, it was claimed that the company had other facilities for the disposal of ashes and that it could haul them away by highway or rail.

The court found that the disposal of ashes near the plant would be convenient

and economical for the company. It found also that ash disposal facilities were an integral part of the company's generating operations, within the meaning of the statute.

On the landowner's own suggestion that other disposal facilities were available to the company, the court observed that that matter went not to the existence of the power, which was the issue before the court, but to the exercise of the power, which was an administrative matter for the commission's determination. The requested injunction was denied and the suit dismissed. *Toler et al. v. Pennsylvania Pub. Utility Commission et al. Equity Docket No. 2182, October 15, 1956, March 6, 1957.*

Gas Rates Changed from Volumetric to Therm Basis

THE Florida commission authorized a gas company to change its rates for manufactured gas from a volumetric to an equivalent therm basis. The company contemplates increasing the therm content from time to time until it reaches 1,000 Btu's per cubic foot, which is the approximate heating value of natural gas.

Since increasing the therm content from 525 Btu to the present 709 Btu, the company has been using a multiplying factor of 1.35 in computing bills. As the heating content is changed in the future, necessity for commission authority to use compensating multiplying factors will be eliminated by changing rate schedules from volume to therms. The customer will simply pay for the therms used rather than the equivalent volume with the multiplying factor. *Re Peoples Water & Gas Co. Docket No. 4996-GU, Order No. 2454, March 6, 1957.*

Carrier Must Not Swap Operating Authority

THE North Carolina commission ordered a contract motor carrier to cease operating in excess of the authority granted upon a showing that the carrier had followed the custom of swapping operating authority by reciprocal arrangements with an irregular route common carrier.

The only consideration which the contract carrier had given to rules and regulations, pointed out the commission, was that a paper-writing purporting to be an equipment lease agreement had been executed and signed by the parties, and that applicable tariff charges had been applied to the movement of property involved on the lessee's bills for service. The evidence, however, plainly showed that the contract carrier dispatched its transportation equipment to the point of origin, directed its drivers in the full transportation operation, and that the movement of the property was under its full and complete control.

Compensation Factor

The irregular route common carrier had received no compensation for any service performed, including the rendition of freight charges, except the privilege to use the interstate operating authority of the contract carrier when found to be convenient. It was admitted that the contract carrier received published tariff charges for the service performed by its transportation equipment, that it had an

agreement with the irregular route common carrier to swap or trade or allow the use of operating authority at the convenience of each of the parties, and that when the need arose for the contract carrier to transport property under the operating authority of the irregular route common carrier, it would simply notify that carrier that it was dispatching trucks to the point of origin and proceed to perform the transportation service, receiving full compensation.

To contend that such an operation complied with statutory and commission rules and regulations as to the leasing of equipment, said the commission, was an abuse of the imagination. If such a practice could be interpreted or be permitted under the present laws, then statutes and commission rules should be put to rest. All carriers following the custom of swapping operating authority by reciprocal arrangements under the guise of an equipment lease, as in this case, should be ordered to cease and desist from such operation, and, upon failure to do so, should have their operating authority vacated and canceled. *Asphalt & Petroleum Co. v. Petroleum Transit Co., Inc. Docket No. T-307, Sub 7, February 8, 1957.*

ICC's Holding That Peat Moss Is Not "Agricultural Commodity" Set Aside

THE United States district court set aside an Interstate Commerce Commission order holding that peat moss was not an agricultural commodity within the meaning of the Interstate Commerce Act. Since shippers of agricultural commodities are exempt from permit requirements, the commission's holding would not have left shippers free to get the best bargain they could from a motor carrier.

For simplicity of discussion, said the court, assume that the commission arbitrarily ruled that tomatoes are not an agricultural commodity. Such a plainly erroneous determination would deprive a tomato farmer of the benefits Congress intended to confer by § 303(b) of the act; namely, those flowing from freedom to use unregulated motor carriers. The shippers had standing to seek court review and an injunction against commission enforcement of the order, and although the commission's determination was entitled to deference by the court, the court was not precluded from passing upon the merits of the question.

The court did not find any of the commission's reasons for holding that peat moss was not an agricultural commodity persuasive. One of the reasons, that peat moss was not a crop which could be harvested within any period of reasonable forecast, was considered insufficient to distinguish it from other wild products which were admittedly "agricultural"; for example, long-lived, slow-growing trees.

Expert Testimony

Witnesses with expert qualifications, several of whom had also had farm experience, had testified that peat moss was commonly regarded as an agricultural commodity.

However, in the absence of any evidence in the record which suggested that peat moss could properly be classified in some nonagricultural category, said the court, no rational basis for disregarding the uniformity of expert opinion existed. The commission was held to have exceeded the limits placed upon its statutory powers in excluding the interstate trans-

portation of peat moss from the exemption provided by § 303(b) of the act. The orders were set aside and an injunction against their enforcement granted. *Premier Peat Moss Corp. et al. v. United States, 147 F Supp 169.*

Award of Chicago-Detroit Route to Airline Unsuccessfully Appealed by Rival Applicant

A FEDERAL court of appeals has affirmed a Civil Aeronautics Board decision awarding temporary authority to North Central Airlines, Inc., to serve a route between Chicago and Detroit via South Bend, Kalamazoo, and Ann Arbor. Lake Central Airlines, Inc., also seeking this authority, brought the review proceedings. American Airlines' service over this route was temporarily suspended.

CAB Findings Attacked

Lake Central attacked the board's finding that the route would integrate into North Central's existing system better than into that of Lake Central. The problem of the board on this aspect of the case, the court noted, was not so much one of resolving factual issues as of exercising its judgment. There was substantial evidence in the record to support the board's finding, leaving the court with no basis for substituting a different determination.

The rival airline contested a finding that the route would be operated by North Central with less cost to the carrier and the federal government than if operated by Lake Central. There was much competing evidence. The board had accepted the examiner's view which took into consideration a number of economic factors, along with the better prospects of North Central to develop increased traffic and revenue.

It was thought that North Central was more likely to have profitable operations, with less cost to the government in the form of subsidization if any were required. The court said it could not say that the board's finding was without substantial support in the record.

Also attacked was a third finding that North Central would more promptly than Lake Central inaugurate local air service over the route. This finding was particularly supported by evidence of North Central's greater financial strength, better credit situation, and numbers of aircraft available. It was no sufficient answer, said the court, that the other airline could also meet acceptable standards. The choice of carrier must be left to the judgment of the board since there was adequate supporting evidence.

Discretion As to Reopening Record

It was contended that the board abused its discretion in refusing to reopen the record.

Legislation was pending at the time to make permanent the temporary authorizations held by local service carriers, the effect of which would be to make permanent the temporary authority granted to North Central. Lake Central wished to submit additional evidence as to public convenience and necessity for the permanent substitution of local service and the choice of carrier.

The court sustained the board's refusal to reopen, pointing out that the legislation made no provision for new hearings, required no additional evidence to accomplish the transition from temporary to permanent status, and established no additional criteria. Furthermore, it was ob-

served, Lake Central presented no data calculated to change the board's decision. *Lake Central Airlines, Inc. v. Civil Aeronautics Board et al. 239 F2d 46.*

Retroactive Application of FCC Amendment

THE United States court of appeals held that the Federal Communications Commission had not abused its discretion in finding that public interest required a protested television permit grant to remain in effect pending the decision in the protest proceedings. Protestants had claimed that the 1956 amendment to the act, which empowered the commission to permit utilization of facility or authorization under a grant issued without hearing and duly protested even though not involving existing service if the commission found that public interest required the utilization, had been retroactively applied in violation of the protestant's constitutional rights of due process.

The court pointed out that retroactive application was permissible if the amendment was either procedural or remedial in character. The amendment, in this instance, could validly be applied to proceedings which had originated before the amendment without depriving the protesting television station of due process rights. *Federal Broadcasting System, Inc. v. Federal Communications Commission, 239 F2d 941.*

Certificate Cancellation without Notice Unconstitutional

CANCELLATION of a motor carrier's certificate of public convenience and necessity without giving him notice or an opportunity to appear or to show cause why it should not be canceled deprived him of due process of law, the Montana supreme court ruled.

The case came before the court on appeal from a judgment in an action by the carrier for a writ of mandamus to compel the commission to remove a cancellation stamp from his certificate. The carrier won the writ, together with costs and attorney's fees. The court held that the carrier had been unconstitutionally deprived of a valuable property right. *Montana ex rel. W. M. Daniels v. Montana Board of R. Comrs. et al. 306 P2d 264.*

Commission Denies Applications to Enlarge Contract Carrier Authority

IN denying the applications of eight contract motor carriers for authority to operate under more than five contracts, the Louisiana commission reviewed motor carrier regulatory history in that state. The first statute had given the commission authority to regulate common carriers but had not conferred authority to regulate contract carriers. The result had been denials of common carrier status in order to escape regulation. During that period, many carriers placed themselves in the anomalous position of claiming to be contract carriers intrastate in Louisiana while holding common carrier certificates from the Interstate Commerce Commission with respect to interstate shipments.

In 1938, a new law extended the com-

mission's jurisdiction to cover contract as well as common carriers by motor vehicle. Since previous experience had demonstrated the necessity of having some yardstick with which to measure the proper operating sphere of each of the two classes, the commission had limited the operations of a contract carrier to five contracts and, if such carrier desired to serve more than five shippers, had required that an application for a common carrier certificate be filed.

Under the statute, however, a contract carrier could obtain permission to operate under more than five contracts if it overcame the burden that it was not a common carrier even though transporting for more than five shippers. Until the filing of the instant applications, this had not been attempted. The commission's use of the 5-contract yardstick had gone unquestioned during the eighteen years which had elapsed since the passage of the law.

Less than Truckload Service Problem

The commission commented that its great problem had always been to maintain service on less than carload shipments to and from the smaller towns where service, although badly needed by the public, was frequently unprofitable to the carrier. Common carriers were happy to serve large towns but rendered service with reluctance at the small intermediate stops. The problem had been solved by the commission's requiring the carriers to serve the large towns as well as the small intermediate towns.

The business done by contract carriers, however, included little or no handling of less than truckload shipments. They invariably handled truckload shipments only, from one shipper to one consignee. From the point of view of desirability of traffic, pointed out the commission, they enjoyed the cream of the motor transportation business since the only limitation was that they could haul for not more than five shippers. If such limitation was removed, so much more of the cream of the traffic would go to the contract carriers and so much more of the "skimmed milk" would be forced upon the common carriers. Extreme difficulty in maintaining less than truckload service by common carriers at the smaller towns would be experienced.

With this situation in mind, the commission found that the applicants had failed to sustain the burden of overcoming the presumption that service to more than five shippers would make the operation that of a common carrier. The commission had the duty, it was stated, to see that no more carriers, either common or contract, are authorized to operate for hire over the highways than the needs of the public require. In meeting such duty, every contract carrier permit issued in the past had been in contemplation that the grantee would serve not more than five shippers. If there had been any prospect that the parties applying for contract carrier permits would have served more shippers, many of the operating authorities would not have been issued at all, since the public would have had no need for them. *Ex Parte Gill et al. Order No. 7046, Nos. 6995-7000, 7008, 7037, October 26, 1956.*

Certificate Extension Unlawful for Want of Evidence

In the absence of substantial supporting evidence, an order of the New Mexico commission authorizing a motor carrier to extend its limited field of operations to

an area statewide was unreasonable and unlawful, the New Mexico supreme court ruled. A lower court judgment setting aside the order was accordingly affirmed.

In seeking the extension of authority, the burden was on the carrier to establish by substantial evidence, not only a public need for additional services statewide, but also the inadequacy of existing services in the territory for which the certificate was sought. This burden was not met. That the evidence might have warranted the granting of some additional service, less than statewide, said the court, was outside the scope of judicial inquiry. Since the proceeding was an action to vacate a commission order, the order could not be remanded for modification or alteration. It had to stand or fall on the record made before the commission. *Ferguson-Steere Motor Co. et al. v. New Mexico State Corp. Commission et al. 306 P2d 637.*

Motor Carrier Contract Charges Limited by Rail Rates Between Same Points

A FEDERAL district court gave judgment for the United States in an action by the government to recover overcharges for transportation by a motor carrier.

Under a contract between the parties, it was provided that the rates should not exceed applicable railroad rates "between the same points." The contracting motor carrier transported property for the government between Hingham, Massachusetts, and Price's Neck, which is within the city limits of Newport, Rhode Island.

Seeking to apply motor carrier rates (which were more than three times the applicable rail rates), the motor carrier contended that its service was different than rail service in this instance and that the lower railroad rates should not apply. Railroad rates provided for service to Newport, but because of the nature of rail facilities, delivery could not be made at the government installation at Price's Neck.

The court ruled that the railroad rates were applicable since they referred to the same "points." The word "points," said the court, is generally understood in the motor transportation industry as meaning, for rate purposes, the entire geographical area within the corporate limits of a city or town. *United States of America v. Benjamin Motor Express, Inc. 147 F Supp 15.*

Other Recent Rulings

Texas-to-Florida Gas Pipeline. Besides relaxing some of the rate conditions imposed in the recent authorization (16 PUR3d 333) of the Texas-to-Florida natural gas pipeline proposed by Houston Texas Gas & Oil Corporation and Coastal Transmission Corporation, the Federal Power Commission has allowed the companies an additional thirty days to complete the filing of tariffs and to accept the certificates issued in December, 1956. *Re Houston Texas Gas & Oil Corp. et al. Docket Nos. G-9262, G-9960, February 21, 1957.*

Gas Required for Irrigation. A federal

district court, in a declaratory judgment action, held to be constitutional on its face an Oklahoma statute providing that natural gas producers must make gas available for agricultural use on the premises where wells are located, in preference to any other use, and under such prices, terms, and conditions, to be ultimately determined by the state commission, as will safeguard the producer in his interest; and the court said the statute, if reasonably construed, would not be unconstitutional. *Phillips Petroleum Co. v. Jones et al. 147 F Supp 122.*

Equalization of Interstate and Intrastate Rates. The United States district court held that a finding by the Interstate Commerce Commission that interstate shippers competing with intrastate shippers of the same commodity in a certain locality of a state were prejudiced to the extent of the excess of interstate over intrastate rates was inadequate to support an order nullifying statewide rates and raising intrastate rates on many commodities, where there had been no finding that the competition existed statewide. *Arkansas Pub. Service Commission v. United States, 147 F Supp 454.*

Crossing Safety Devices. Observing that a commission order must be upheld when supported by substantial evidence and not otherwise unlawful or unreasonable, the Ohio supreme court sustained the commission in requiring a railroad to install flasher signals and other safety devices at crossings of city streets. *New York Central R. Co. v. Ohio Pub. Utilities Commission, 139 NE2d 623.*

Public Cartman. The New York city magistrates' court held that a trucker performing services for anyone engaged in the ladies' wearing apparel industry and who had solicited business from everyone in the industry was a public cartman engaged in the operation of a public cart for which a license was required by municipal code. *Samboy v. Sherman, 158 NYS2d 835.*

Trial de Novo. The Tennessee court of appeals held that a statute using the term "appeal" provides for a trial *de novo,* that is a trial in all respects the same as if the case had originated in the appellate court; while an "appeal in error" was held to be in the nature of a new suit in which the parties seeking review had to carry the burden of showing the judgment erroneous, and in which the hearing was not *de novo* unless the controlling statutes so provided. *Griffitts v. Rockford Utility Dist. 298 SW2d 33.*

Debtor and Creditor Relationship. The New Jersey supreme court held that the relationship between an electric company and its consumers with reference to deposits made to secure the company against nonpayment of charges for services rendered was that of debtor and creditor where the company was required to pay a fixed rate of interest on the deposits and had, without objection, long engaged in the practice of commingling the deposits with general funds. *New Jersey v. Atlantic City Electric Co. 128 A2d 861.*

Working Capital Allowance. The Connecticut commission granted a 45-day cash working capital allowance to a water company, which amounted to 12½ per cent of annual operating expenses less depreciation and taxes. *Re Milford Water Co. Docket No. 9395, March 12, 1957.*

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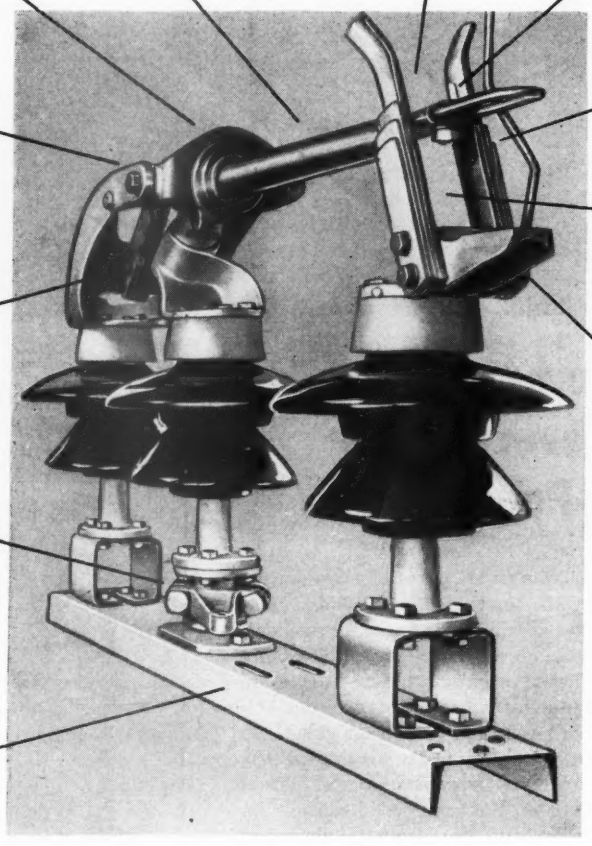

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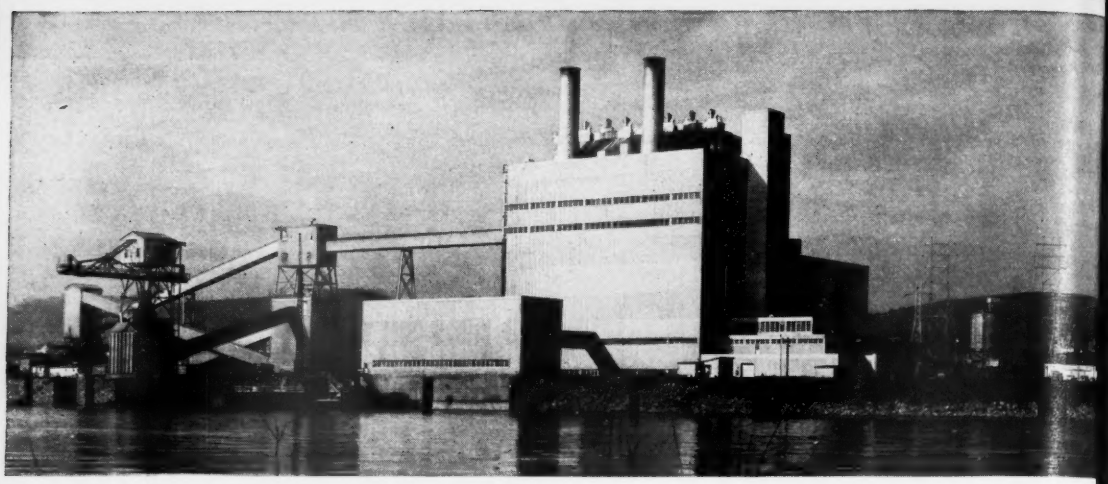

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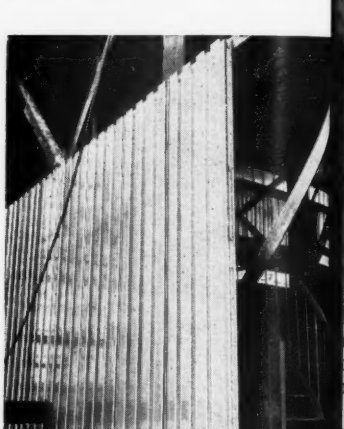

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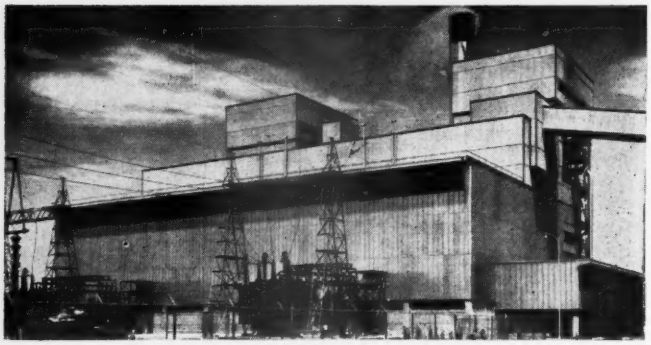

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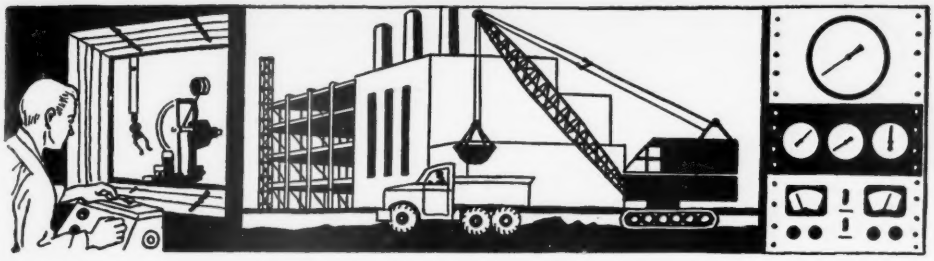

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uesne Light to Install Another enerator at Elrama Station

QUESNE Light Company will ll the largest turbine generator it ever built at a total cost of over 00,000 at its Elrama power sta- to supply the increasing demands electric power in the Pittsburgh ict, Philip A. Fleger, board chair- told stockholders of the company eir recent annual meeting. Elrama r station is on the Monongahela , 4 miles above Clairton.

he new generator will have a net bility of 172,000 kilowatts, and bring the total capability of ma station up to almost 500,000 watts. It will require additional 00-volt transmission lines and sformers and switching facilities e Woodville and Dravosburg sub- ons, he said.

nstruction is expected to start as as preliminary engineering is leted by Stone & Webster Engi- ng Corporation, engineers and tructors for the new addition. turbine-generator will be built by tinghouse Electric Corporation, id, and Babcock & Wilcox Com- will build the boiler.

he first unit at Elrama power sta- a 102,000-kilowatt unit, was leted in 1952. A second 102,000- watt unit was added in 1953, and 0,000-kilowatt unit was added in . Duquesne Light Company's generating capability is now 1,- 00 kilowatts.

v Transformer Maintenance Booklet Available from Westinghouse

EW 50-page booklet entitled ely Tips on Transformer Main- ce" is available from Westing- e Electric Corporation. The let discusses transformers and maintenance and includes such subjects as general inspection procedures, classification of transformers, methods of drying out, and transformer connections. It is written for maintenance people in electric utilities, industrial plants, and commercial buildings.

For a copy of booklet B-4716-B, write Westinghouse Electric Corporation, P. O. Box 2099, Pittsburgh 30, Pennsylvania.

Gulf States Utilities Has $48,000,000 Program

GULF States Utilities Company plans to spend $48,000,000 on new construction this year, according to Roy S. Nelson, president. About $30,000,000 will go toward new generating capacity, $10,000,000 for distribution lines and $8,000,000 for transmission equipment.

Pennsylvania Power & Light Orders Gas-Filled Transformer

AN order for a gas-filled transformer larger than any yet built was announced recently by General Electric's Power Transformer Department.

The 10,000 kilovolt-ampere unit, the third example of a revolutionary new design, is being built for the Pennsylvania Power & Light Company, Allentown, Pa.

It will "step down" power from 62,700-volt transmission lines to 12,470 volts at a new P. P. & L. substation.

Cooled and insulated by sulphur-hexafluoride gas instead of oil, the new transformers are quieter, lighter, and safer than oil-filled units, according to G-E engineers. Two 2,000-KVA gas-filled transformers, believed to be the first in the world, were built last year by General Electric.

The gas, a compound of sulphur and fluorine with the chemical formula SF_6, is stable, nontoxic, and nonflammable, and an excellent electrical insulator and heat transfer medium.

Sealed in the transformer tank at about twice atmospheric pressure, the gas is pumped through the magnetic steel core and copper coils, absorbing their heat and transferring it to the outside air through fan-cooled radiators mounted on the transformer's side.

The unit is scheduled for delivery in 1958.

Ruud Bulletins Describe Rental Plan for Gas Water Heaters

HOW utilities can increase their revenue quickly through commercial rental of automatic gas water heaters is described in two brochures available from Ruud Manufacturing Company, Kalamazoo, Michigan.

The new literature pieces discuss the experience of Citizens Gas & Coke Utility, Indianapolis, Indiana, in conducting what is believed to be the first successful large-scale rental plan in the country for commercial gas water heaters. In 18 months, this company rented 252 units, compared with only 27 commercial gas water heaters sold in the previous 12 months.

One brochure, "The Indianapolis Story," prepared jointly by Citizens Gas & Coke and Ruud, describes the mechanics of the rental plan, listing types of customers and other details. The second brochure, "The Story Behind the Indianapolis Story," is an outline by Ruud of how other utilities can use this same plan.

$75,000,000 Program Planned By South Carolina Elec. & Gas

SOUTH Carolina Electric & Gas Company expects to spend about $75,000,000 on new construction in the three years 1957-59, of which an estimated $29,000,000 will be spent this

(*Continued on page* 30)

year, according to S. C. McMeekin, president. A sizable portion of the 1957 expansion budget will go toward furthering the construction of a new 275,000 kilowatt generator expected to be in operation in 1958 that will boost the company's total capacity to about 890,000 kilowatts.

American Meter Issues New Brochure on Reliance Series 1400 and 1500 Gas Regulators

A comprehensive brochure on gas regulators for house or service installation has just been published by American Meter Company, describing their Reliance Series 1400 and Series 1500 regulators.

Identified as Bulletin 100, the new catalog gives complete details on 36 different regulator models made by American Meter in this classification. Included is information on construction, capacities, dimensions, standard modifications and replacement parts. Series 1400 is the terminology applied to the 36 regulator models without meter bars. The same models with meter bars are classified as Series 1500.

Copies of the new brochure are available from American Meter Company, Erie, Pennsylvania, or other company offices.

Nuclear Engineers Get Opportunity for Experience in AEC Plants

THE Atomic Energy Commission has enlarged its program under which privately employed nuclear scientists and engineers may obtain specialized work experience in AEC laboratories and plants as an aid in the further development and use of atomic energy for peaceful purposes.

Salaries and expenses of those assigned to Commission laboratories and plants under the work experience program will be paid by the firms employing them. All assigned employees must receive appropriate security clearance.

The program will be administered by Commission field offices, assisted by AEC's Division of Civilian Application. Its primary purpose is to help people already generally educated and trained in nuclear science and technology to become familiar with specific uses; it is not intended program offering basic training. problem of a country-wide sho of nuclear scientists is a sepa longer-range problem which the mission is helping to relieve thr schools and training courses ducted at its own facilities through aid to the instructional grams of colleges and universiti

The work experience prog recognizes (1) that scientists an gineers qualified through training experience to apply nuclear techn directly to specific projects are n sary to expansion of peaceful ap tions and to increased industrial ticipation and (2) that until a di fied private industry is developed necessary training and exper often can be obtained only in Com sion facilities.

Firms and organizations inter in the program should address inquiries to the Commission's Operations Office having jurisdi over the facility in which work ex ence is sought. Inquiry may be too, of the Director, Division Civilian Application, Atomic En Commission, Washington, D. C.

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lectric Soot Blowers to Be nstalled in Consol. Edison Generators

) of the world's largest steam rators now on order by the Con- ated Edison Company of New , Inc., will be equipped with all- ric soot blowing systems.

he two systems, one for the new destined for the company's As- station, and the other for the ur Kill station, are being built by s-Vulcan Division, Blaw-Knox pany, Erie, Pennsylvania. Nerve rs of each system are individual tive Sequence control boards h supervise the soot-blowing um through long retractable soot ers and wall deslaggers.

he radiant-heat type steam gen- rs, being built by Babcock & ox, will have a capacity of 2,- 00 lb. per hour with a super- r outlet pressure of 2,150 psig superheat of 1,050 degrees F with t to 1,000 F. They are designed fired by pulverized coal, oil or

o-operative Power Plan Set Up in Southwest

operative plan for upping power y in southwestern Arizona, Cali- a and Northern Mexico, was re- d recently by Arizona Public ice Co., California Electric Power nd the Imperial Irrigation Dis- The plan calls for construction 160,000 kilowatt plant, at Yuma, , to be built jointly by Arizona ic Service and Calectric. The Ir- ion district will share in the ulti- power generation pool. To be ted by Arizona Public Service, rship of the plant will be split the middle between the two util- mpanies. A time-table for instal- of the units scheduled a 1959 letion for Calectric's unit and for the Arizona Public Service

e coordination agreement signed three parties covers the develop- of their respective systems in on to building of lines to provide mission facilities. In the past, three system operators have had us operating agreements for al assistance under emergency tions and for some incidental supply.

izona Public Service has its main in the central Arizona area. ocal system in the Yuma area is onnected with the central facili- hrough the U. S. Bureau of

(*Continued on page* 32)

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Reclamation's Parker-Davis transmission system in Arizona. In recent years, owing to the rapid growth of the Yuma area, it has been necessary to wheel power into Yuma from the main Public Service system.

Imperial Irrigation District operates the electric system in Imperial county and elsewhere in southeastern California. It, too, is connected with the USBR Parker-Davis transmission system in southeastern California.

Calectric operates in the Blythe area. Its wholly owned subsidiary in Mexico serves the San Luis area south of the Arizona border below Yuma and also has a sizable load in Mexicali and to the south. Calectric receives power deliveries from the USBR Parker system, and is also interconnected with the Imperial Irrigation local system, for power supply to its wholly owned subsidiary. Calectric's main system is in the San Bernardino area and extends north into Nevada. It, too, is interconnected with the Imperial Irrigation District, with certain limitations for interchange of power.

Primary facilities of each party will be located on the real estate owned by that company. There will be, of course, certain "common facilities" to be used by both parties. Equal investment by the participants will cover these facilities. Mutual easements will be granted one to the other.

The coordination agreement between all three parties provides for cooperation in the development and operation of their respective electric systems in the area.

Atlantic City Electric to Spend $91,000,000 in Next 5 Years

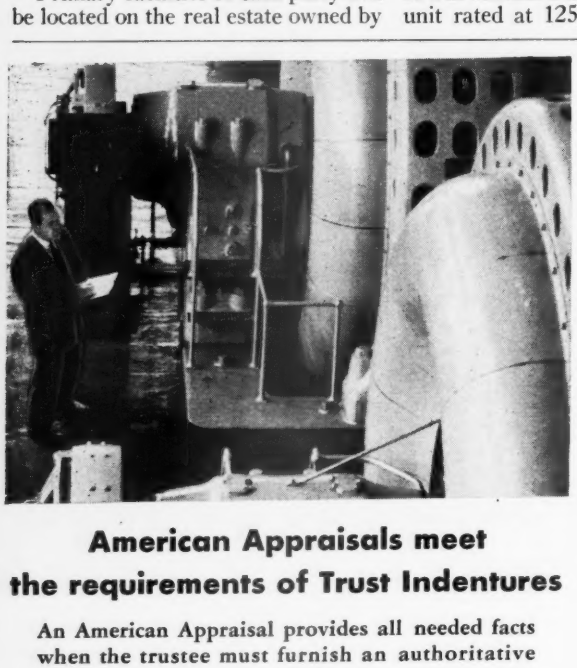
ATLANTIC City Electric Company will spend nearly $91,000,000 for new construction to supply anticipated growth in southern New Jersey during the next five years, Bayard L. England, president, told stockholders attending the recent Annual Meeting.

Approximately one-half of the construction budget will be allocated for additional generating units at Deepwater station in Salem county and a new power plant in Beesley's Point, Cape May county. The new station is scheduled for early 1961. It will contain a new turbo-generating unit rated at 125,000 kw. Nineteen million dollars of the budget wi used in 1957, including completio a new turbo-generating unit b built to serve the Du Pont Compa Chambers Works and to start an ditional 79,000 kw Unit at D water. The remaining one-half o budget will be devoted to new stations, transmission and distr tion lines and related equipment

Vepco to Spend $70,000,0 On Construction in 1957

VIRGINIA Electric & Power C pany is currently engaged in an pansion program which will 750,000 kilowatts of generating pacity to its system by 1959. company has another hydroele station on the drawing boards an additional 87,000 kw capacit will spend about $70,000,000 in expansion during 1957, up f $44,500,000 last year.

When the current expansion gram is completed probably in Vepco's system-wide capacity wi 1,900,000 kw, up from 1,150,00 present. The company had 432,000 kw capacity in 1945.



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eased capacity will come primarily from additions to existing stations, although the company is building a new station adjacent to American Oil Co.'s refinery at Yorktown, which will have 300,000 kw capacity when completed in 1958 at a cost of about $49 million. The company also is planning construction of a 200,000 kw hydroelectric station on the Roanoke river, at Gaston, North Carolina, which will cost an estimated $40,000,000. This project is awaiting approval of the Federal Power Commission.

Copes-Vulcan Bulletin on Vulcan T-30 Soot Blowers

BULLETIN No. 1030, recently published by Copes-Vulcan Division, Lew-Knox Company, Erie, Pennsylvania, describes Vulcan T-30 retractable soot blowers presently available in lengths up to 38 feet.

Clear cross sectional drawings explain the workings of all moving parts and actuating components. Also listed are special design features which assure effective tube cleaning and long trouble-free performance. The T-30 is designed to clean the widest furnaces as well as withstand the severe requirements of outdoor service.

Puget Sound Power & Lt. to Increase Facilities 60% by 1959

To meet growing demands, Puget Sound Power & Light Company has planned a $90,000,000 construction program for 1956-59, increasing its facilities by 60 per cent, according to Frank McLaughlin, president.

Puget's service area in Western Washington is expected to increase 60 per cent in population with a 30 per cent gain in per capita income by 1965, Mr. McLaughlin noted.

Consumers Power Given Rural Electrification Award

CONSUMERS Power Company has been named as the American electric company that did the best job of serving its farm customers in 1956.

The Thomas W. Martin Rural Electrification Award, an electric industry "Oscar," was presented to the company at a meeting of the Edison Electric Institute in Chicago. The award is given annually to the electric company which, in the opinion of the award committee, has made "the greatest contribution to rural electrification and agricultural advancement in the area served." It was accepted by Percy R. Schepers, general farm service supervisor for Consumers.

It was the second time the award has come to Consumers. The first time was for the year 1937.

In picking Consumers for the 1956 award the committee gave consideration to the day-to-day activities of the company's farm service organization, which includes 22 farm service advisors distributed among the 61 counties of the Consumers' electric service area. The committee also took note of Consumers' cooperation with Michigan State University, county agricultural agents, county home demonstration agents, county 4-H Club Agents, vocational agriculture teachers, electricians, electrical equipment distributors and dealers, the Farm Bureau, the State Grange, the State Department of Agriculture and other organizations concerned with the advancement of various form of agriculture and the conservation of soil and water.

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(*Continued on page* 34)

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April 9, 1957.

000 farm customers—a larger number than any other electric company. It also serves 72,930 nonfarm customers on rural lines, and 44,000 summer resort customers.

Hughey & Phillips Introduces New Microwave Tower Control & Alarm Unit

A NEW line of microwave antenna tower obstruction lighting control and alarm units has been announced by Hughey & Phillips, Burbank, California.

Designed to meet FCC and CAA requirements for unattended radio relay installations, the units also incorporate all control, test, and lamp failure alarm features specified by the A T & T Long Lines Department.

Housed in a single, compact cabinet for indoor mounting, the Control Units are available in several types to accommodate towers requiring one, two, or three light levels.

Further details available from the manufacturer: Hughey & Phillips, Inc., 3200 No. San Fernando Blvd., Burbank, California.

Westinghouse Official Sets 1963 Electrical Needs of Industry At 450 Billion Kw-Hr

AMERICA's industries will require 450 billion kw-hr of electrical power in 1963—much more than had been previously calculated, a Westinghouse Electric Corporation executive predicted.

The 450 billion kw-hr figure represents an increase of 12½ per cent over the prediction for 1963 made three years ago, A. C. Monteith, Westinghouse vice president in charge of apparatus products, said. He spoke at the 24th annual meeting of the Southeastern Electric Exchange, Boca Raton, Fla.

In 1954, Westinghouse made 10-year forecasts of kilowatt-hour consumption based on long and careful studies, he said. At that time, it was estimated that industrial power needs in 1963 would be 400 billion kw-hr.

"With seven more years to go, it already appears that our estimate was low by 50 billion kw-hr," he said. "We in the electrical industry have often said that the use of electric power is doubling every 10 years. But now we find that throughout the postwar economy, we have been doubling power use every seven years."

The same trend applies in a study of needs for the residential market. Mr. Monteith noted that the prediction in 1954 was for 235 billion kw-hr at the end of the 10-year period. The most recent study revises this up to 271 billion.

"These growth figures of our industry, past and projected, are indeed wonderful," the Westinghouse vice president said. "As I have described them, an outsider might be forgiven if he concluded that all we have to do is provide the facilities and then sit back and watch the load grow. Of course we cannot for a moment assume such a thing."

Complacency at the way the electrical industry has grown in the past and an overconfident assumption that it will grow automatically that way in the future are "attitudes that will hurt us all," Mr. Monteith observed.

Electric utilities have purchased about 19 million kilowatts of generating capacity annually for the past two years and will need a strong sales program to develop uses for that power, he said.

Both the equipment manufacturer and the public utility have a stake in the continuing efforts to reduce costs per kw-hr, he said. In addition, there must be closer coöperation between these two groups in helping our common customers in the planning and use of electrical apparatus.

"We in the electrical industry have a great opportunity," Mr. Monteith concluded. "But this opportunity presents a challenge unequalled in any industry in this country. Whether we live up to this challenge will be the measure of our success. Despite the amazing performance of our industry in the past and despite the even more enormous possible growth projected for the future, this is no time for us to be complacent."

New A-C Literature Discusses Advances in Field of Large Steam Turbines

ADVANCES in the field of large steam turbines is the subject of new literature based on a paper by C. D. Wilson, chief turbine design engineer of Allis-Chalmers steam turbine department, presented before the 19th annual meeting of the American Power Conference.

The 12-page booklet covers a number of significant developments of interest to the power field. These include the world's first 300-mw unit for Detroit Edison, using the close-coupled, cross-compound arr ment; a 250-mw centerline-at- level unit for the Oak Creek st of Wisconsin Electric Power Co. tandem triple-flow units in the to 250-mw range, representing currently large ratings for 3600 single-shaft machines.

Among the developments portr in the bulletin is a new under turning gear for units 100-mw larger. This type gear is install the lower half of the pedestal and not have to be disconnected o moved when servicing the turbin

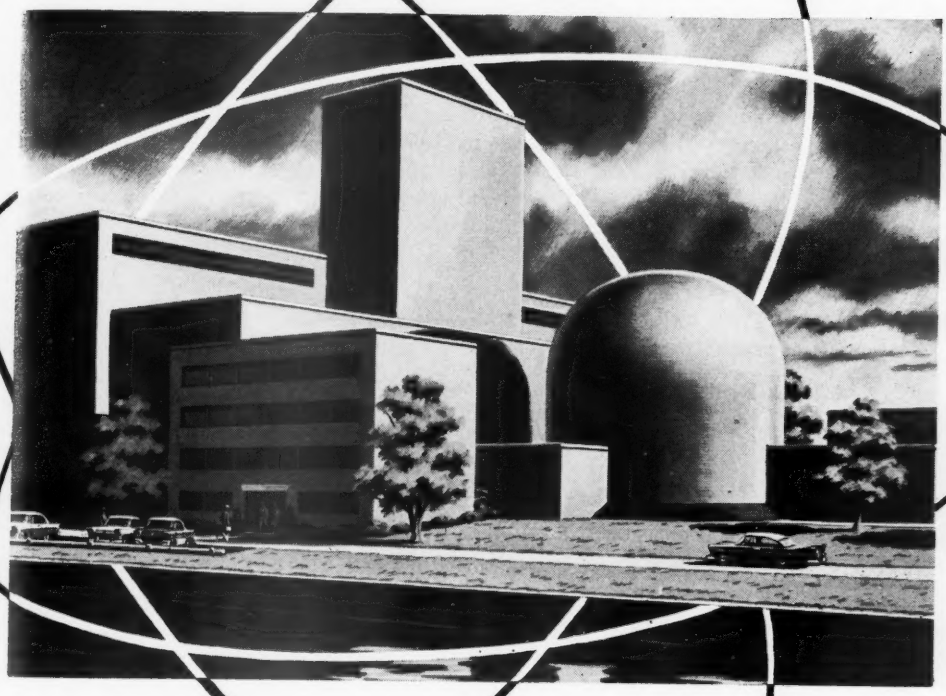
Copies of "Advances in the of Large Steam Turbines," 03R8 are available on request from Chalmers Manufacturing Comp Milwaukee 1, Wis.

Hi-Voltage Inter-tie Betwee Maine & New Brunswick

IN a joint statement made rece C. Hazen Stetson, executive president of Maine Public Se Company, and R. E. Tweeddale sistant chief engineer of The Brunswick Electric Power Com sion, announced that a contract been signed which will bring mut beneficial results beginning late year through a high-voltage inter nection between the Maine compa transmission system and the tr mission system of The New Br wick Electric Power Commission River De Chute.

Construction of 10.9 miles 69,000 volt transmission line wi necessary from Flo's Inn substa near Presque Isle, to the Maine- Brunswick border near River Chute. This line will be built by M Public Service Company. From R De Chute, The New Brunswick C mission will construct about six m of 69,000 volt transmission line.

The interconnection will mak possible for the two systems to be erated in parallel thus effecting erating economies. It will perm reduction in the reserve genera capacity of the two systems. It also permit the installation of la and more efficient generating unit the future and make possible a mu assistance power program in the a served by Maine Public Service C pany and The New Brunswick E tric Power Commission. For prac reasons, the interconnection will h a rating of 20,000 kw. This ca increased, when necessary, to 30 kw by a change in the terminal eq ment.



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by Francis X. Welch, B. Litt., LL. B., LL. M.

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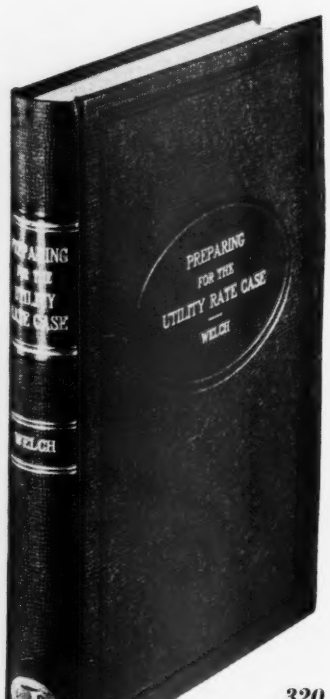

320 Pages

Price: $10

The volume, being the first of its kind, should be found invaluable to ***utility executives, rate case personnel, attorneys, accountants, consultants, regulatory commissions, rate case protestants,*** and, in fact, to all persons engaged in or having an interest in rate cases.

Among the values of this compilation are the reviews of methods and procedures, which have been found helpful in—

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- **saving time and expense of companies, commissions and other parties**
- **cutting down "lag losses"**
- **aiding the consumer by making possible faster plant and service improvements**
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—all of which are in the public interest.

The volume does not offer a program of standardized procedures for rate case preparation, but ***reviews*** the *plain* and ***practical methods that have been used.***

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Operating Expenses, Continued—Annual Depreciation
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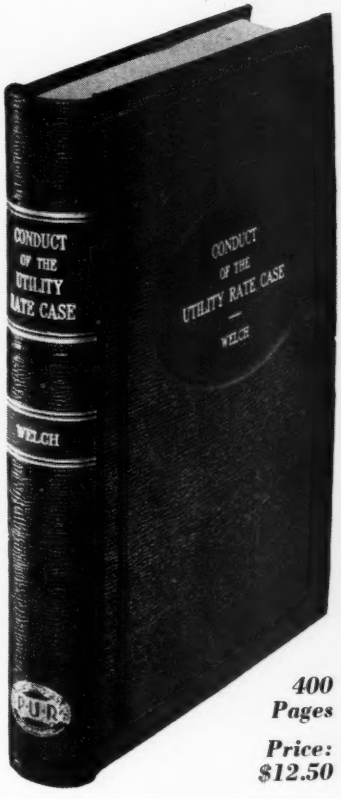
Appeal and Review



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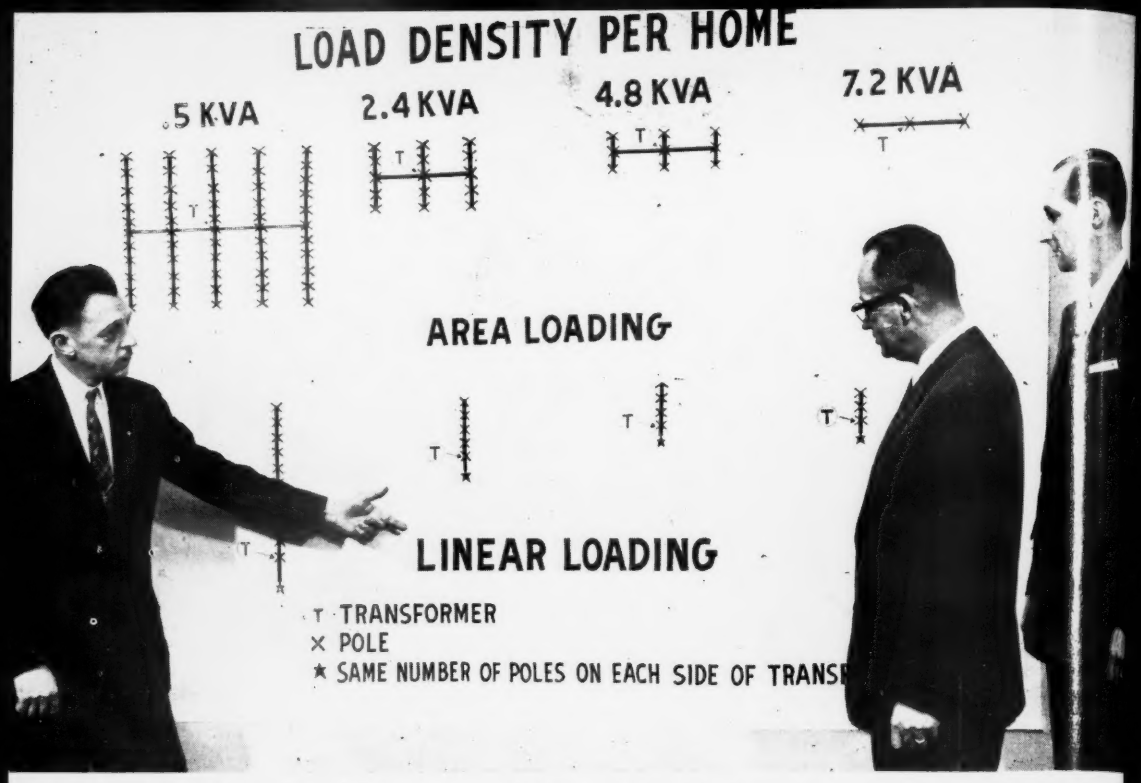

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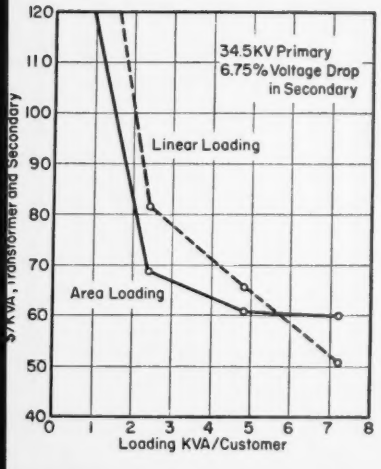

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